DOCUMENT RESUME

ED 456 235 CE 082 192

TITLE	Distance Learning 2000: Proceedings of the Annual Conference on Distance Teaching & Learning (16th, Madison, Wisconsin, August 2-4, 2000).
INSTITUTION	Wisconsin Univ. System, Madison.
PUB DATE	2000-08-00
NOTE	494p.; William Winfield was conference chair.
AVAILABLE FROM	Distance Teaching & Learning Conference Manager, University of Wisconsin-Madison, Suite B136 Lathrop Hall, 1050 University Avenue, Madison, WI 53706-1386 ($25). Tel: 608-265-4159.
PUB TYPE	Collected Works - Proceedings (021)
EDRS PRICE	EDRS Price MF02 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Accessibility (for Disabled); Accreditation (Institutions); Adult Education; Agricultural Education; Bachelors Degrees; Business Administration; Clinical Experience; *Computer Mediated Communication; Computer Simulation; Computer Uses in Education; Continuing Education; Course Evaluation; Cultural Influences; Curriculum Design; Developed Nations; *Distance Education; Educational Environment; Educational Television; Elementary Secondary Education; *Faculty Development; Foreign Countries; General Education; Higher Education; Human Factors Engineering; *Instructional Design; Instructional Materials; Internet; Learning Strategies; Masters Degrees; Multimedia Instruction; Online Courses; Peer Relationship; Program Evaluation; Program Implementation; Second Language Instruction; Teacher Characteristics; Teacher Education; Teacher Effectiveness; Teacher Student Relationship; Teacher Workshops; *Teaching Methods; Technology Education; Veterinary Assistants
IDENTIFIERS	Copyright Law 1976; Hong Kong; Louisiana; Video Teleconferencing; Virtual Classrooms; Web Based Instruction

ABSTRACT

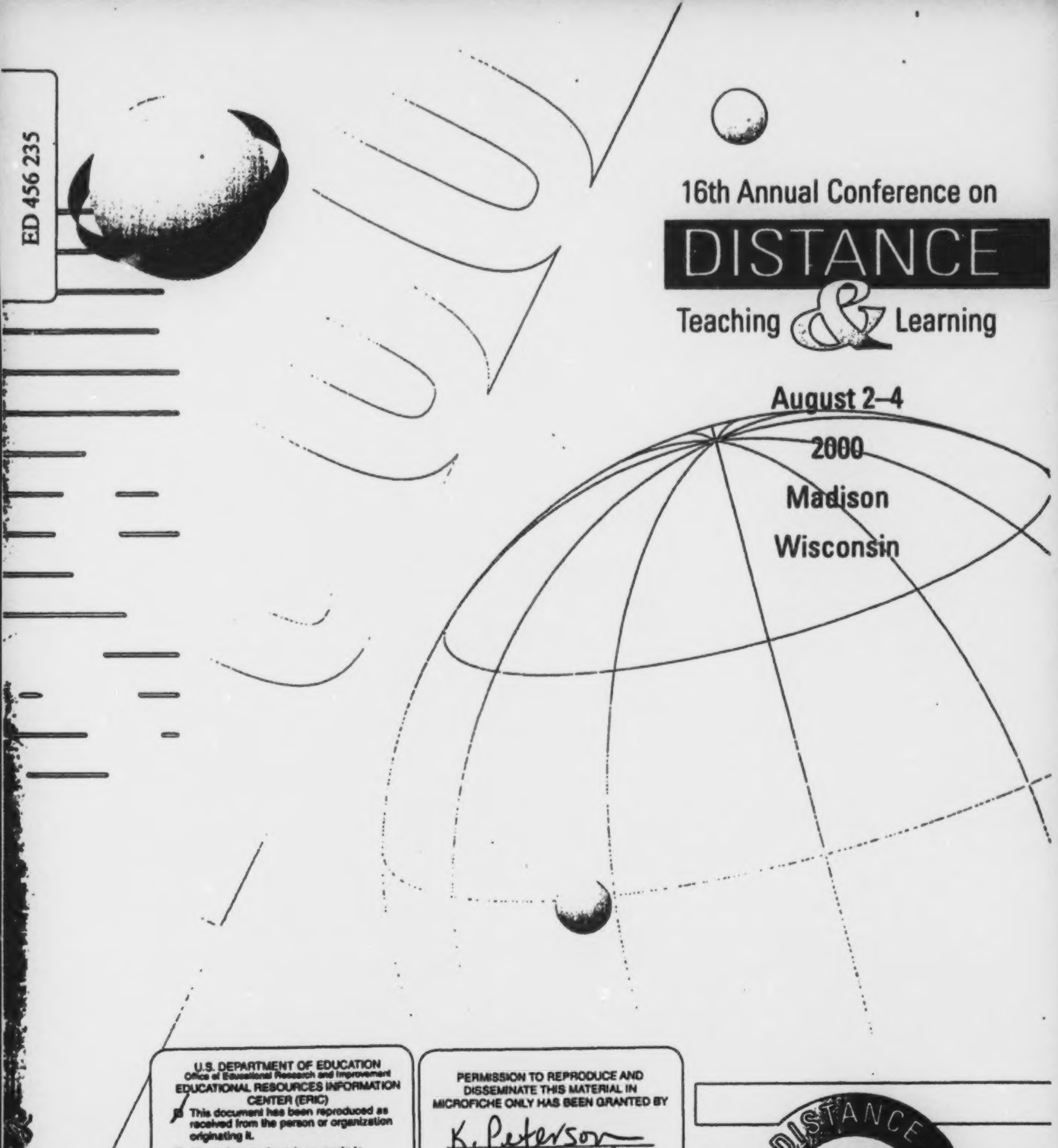
These proceedings contain 75 papers from information sessions that address important human factors in distance education from several perspectives, including implementation planning, management and policy, instructional design, teaching methods, faculty development, learning environments, learner supports, and evaluation. Among the papers are: "Best Practices in Strategic Planning and Implementation" (Abbiatti, Decuir); "Who's on the Line?" (Adria, Woudstra); "Creating a Virtual Learning Community" (Ahearn, Blunt); "Don't Just Have Talking Heads" (Allers, Hays); "Learning Strategies Used by Distance Education Students" (Ally); "State Educational Institutions Granted Immunity for Patent and Trademark Infringement" (Armatas); "Shifting from Resident to Synchronous Web-Based Training" (Arnold, Palmore); "Accrediting General Education in Distance Learning Bachelor's Degree Programs" (Baker, Lucas); "How To Correlate Multi-Media Presentations with Interactive Student Guides" (Barnes, Clark); "Conversion of an Intensive Clinical-Based On-Campus Program to a Web-Based Distance Learning Format" (Bill); "Aviation Skills Training in the Army National Guard" (Bond, Pugh); "Adapting e-learning Tools from Educational to Training Environments" (Bonk, Wisher); "University of Wisconsin Pilot Dairy Distance Education" (Brannstrom, Cates); "Videoconferencing in the Nation's

Reproductions supplied by EDRS are the best that can be made
from the original document.

5th Largest Public School System" (Butler-Pearson); "Online Faculty Workshops" (Campbell); Building a Learning System Using a Combination of Classroom and Distance Learning" (Campbell, Merchant); "Tutor Personality as a Contributing Factor of Teaching Effectiveness in Distance Education" (Chan); "Hong Kong Adult Education Concerns for Internet Technology" (Bruce, Venus); "Using WebCT to Redesign a Large Lecture Freshman Class" (Cole et al.); "Helping Faculty Design Effective Online Courses" (Darden, Greer); "National Guard Bureau Distributive Training Technology Project" (Donovan); "Supporting and Hosting Web-Based Learning Systems in the University of Wisconsin System" (Douglas); "Creating Successful Online Discussions" (Draves); "Strategies, Protocols, and Policies for Student Management in Online Courses" (Fleck, McQueen); "Adding Up the Distance" (Foshay, Perez); "Adapting Traditional Instruction to Distance Learning" (Gallmann, Kagle); "The UT System MBA Online Adventure" (Gaulden, Hardy); "Collaborative Distance Learning for Advanced French Oral Proficiency in Professional Contexts" (Germain-Rutherford, Halzen); "Model-Centered Instruction" (Gibbons, Willden); "Building Web-Based Instructors" (Giles, Thompson); "Using the Seven Principles of Good Practice to Evaluate Online Courses" (Graham et al.); "Designing a World Wide Web Project Using Streaming Video" (Greenberg); "Transforming Faculty Development Workshops into Learner-Centered Experiences" (Guan et al.); "There's Nothing Virtual About It" (Hardy et al.); "Captivating Your Audience from a Distance" (Horton, Haywood); "Problem-Based Learning in an On-line Course" (Ingebritsen, Cheaney); "Instructional Television in Wisconsin" (Jeffers et al.); "Relationship of Group Processes to Virtual Learning Team Performance" (Johnson et al.); "Interactive Television" (Kopitzke, Nickels); "Activity-Based Costing Models" (Kraenzel, Smith); "We're in This Together" (Lawson et al.); "Bridging the Gap Between Practice and Knowledge" (Lewis et al.); "Case Study of a Large-Scale Use of Asynchronous, Multinational, Collaborative Learning at the Graduate Level" (Lopez-Islas et al.); "Why You Need a Training Management System and How to Get the Right One" (McCaffrey et al.); "<XML>Your Course Here</XML" (Mealy, Reeser); "Building Online Learning Communities in a Graduate Program in Adult Education" (Merrill); "Use of a Social-Behavioral Model in the Development of a Distance Course for Adults with Vision Loss" (Moisey); "Selecting Pedagogical Methods Based on Learning Requirements" (Molenda); "Satisfying the Stakeholders" (Molenda et al.); "Key to a Dynamic Learning Environment" (Moran); "Distance Education and Copyright Law" (Morgan); "Teacher Training and Support for Web-Supplemented and Web-Baseed Instruction in Secondary Schools" (Olina et al.); "Using the Internet to Offer Post-Baccalaureate Continuing Education Units" (Oliver, Cupp); and "Minimum Technical Competencies Required of Students in a Distance Education Course" (Osika, Sharp). Seven workshop papers are also provided. (YLB)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 456 235



16th Annual Conference on

DISTANCE Teaching & Learning

August 2–4

2000

Madison

Wisconsin

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☒ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

- Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY

K. Peterson

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

2B

BEST COPY AVAILABLE

DISTANCE 2000 LEARNING

conference proceedings

2

16th Annual Conference on Distance Teaching and Learning

August 2–4, 2000
Madison, Wisconsin

This year the Annual Conference on Distance Teaching and Learning celebrates its 16th anniversary in serving as a forum for the exchange of information on distance education and training. In the past decade and a half, thousands of attendees have gathered in Madison to discuss key issues in using technology effectively. And hundreds of speakers have shared their knowledge and experience through papers, presentations, workshops, and roundtables.

Throughout its 16-year history, the conference's major aim has been to increase our understanding of factors that contribute to effective applications. While technology provides an essential means to span geographic distance, the keys to success reside in human factors—in what people do to plan, design, and support distance learning applications. This year's conference is no exception. The 16th Annual Conference proceedings contains more than 80 papers that address important human factors from several perspectives, including implementation planning, management and policy, instructional design, teaching methods, faculty development, learning environments, learner supports, and evaluation. The authors, as experienced distance educators or trainers, provide insights into how those factors contribute to successful outcomes and describe practical methods for implementing similar approaches in other settings.

Distance education has a rich history of more than a century of service in providing learning opportunities through technology. From the early correspondence courses of the 1880s to current use of video and the Internet, the distance education ideal has been to increase access to quality teaching resources by eliminating the barriers of place and time.

Today, distance education is poised on the threshold of a new millennium. The rapid growth and dramatic changes occurring in distance education raise critical questions about how we preserve the historic ideals of access and quality in what is increasingly viewed as a global eLearning marketplace. As the papers in this proceedings remind us, focusing on effective approaches, strategies, and techniques goes beyond technology and market trends. It requires a commitment to human factors, an investment in human resources, and the human capacity to incorporate best practices into wise applications that meet learning needs in an ever expanding global educational network.

My thanks to the many people who have contributed to this conference over the past 16 years. I wish to particularly acknowledge Dr. Christine Olgren, Dr. Terry L. Gibson and Dr. Chere Campbell Gibson who served as previous chairs of this conference and who continue to guide its aims through their dedication to the ideals of access and quality.

William Winfield
Conference Chair
University of Wisconsin-Madison

Cover design by Artifax
Layout by Maryanne Haselow-Dulin, Editing Services
© Copyright 2000. University of Wisconsin System

Table of Contents

Information Sessions

Michael C. Abbiatti, Louisiana Board of Regents
Denise M. Decuir, Louisiana Board of Regents
Best Practices in Strategic Planning and Implementation: Electronic Learning in Louisiana Is Tearing Down the "Silos" 3

Marco Adria, University of Alberta
Andrew Woudstra, Athabasca University School of Business
Who's on the Line? Managing Student Interactions in Distance Learning Using a One-Window Approach 7

Catherine Ahearn, Dental Benefit Providers, Inc.
Rick Blunt, Office of the Assistant Secretary of Defense for Reserve Affairs
Creating a Virtual Learning Community 13

Joyce Allers, Children's Healthcare of Atlanta
Kinberly Hays, Children's Healthcare of Atlanta
Don't Just Have Talking Heads 19

Mohamed Ally, Athabasca University
Learning Strategies Used by Distance Education Students 23

Steven A. Armatas, Buckingham, Doolittle & Burroughs, LLP
State Educational Institutions Granted Immunity for Patent and Trademark Infringement 29

LCDR Richard Arnold, Performance Technology Center Yorktown
Rebecca Palmore, Performance Technology Center Yorktown
Shifting From Resident to Synchronous Web-Based Training: A U.S. Coast Guard Case Study 33

John S. Baker, Jr., LSU Law Center
Dr. George Lucas, American Academy of Liberal Education
Accrediting General Education in Distance Learning Bachelor's Degree Programs 39

Felicie M. Barnes, Grambling State University
Augusta A. Clark, Grambling State University
How to Correlate Multi-Media Presentations With Interactive Student Guides: Design Techniques 43

Dr. Robert (Pete) Bill, Purdue University School of Veterinary Medicine
Conversion of an Intensive Clinical-Based On-Campus Program to a Web-Based Distance Learning Format: The Veterinary Technology Distance Learning Program 51

Lt. Col. Craig Bond, National Guard Bureau, Army Training Division
Joseph Pugh, Richard S. Carson & Associates, Inc.
Aviation Skills Training in the Army National Guard 57

Curtis J. Bonk, Indiana University
Robert A. Wisher, U.S. Army Research Institute
Adapting e-learning Tools From Educational to Training Environments 63

Arlin Brannstrom, UW Center for Dairy Profitability
Dr. Dick Cates, UW School for Beginning Dairy Farmers
University of Wisconsin Pilot Dairy Distance Education: The School for Beginning Dairy Farmers 71

MaryAnn Butler-Pearson, Broward County Public Schools
Videoconferencing in the Nation's 5th Largest Public School System 77

Amy Campbell, Wayne State University
Online Faculty Workshops 81

Mary Campbell, Global Leadership Institute/Intellinex
Sandra Merchant, Global Leadership Institute/Intellinex
Building a Learning System Using a Combination of Classroom and Distance Learning 87

Bobbie Chan, Open University of Hong Kong
Tutor Personality as a Contributing Factor of Teaching Effectiveness in Distance Education: A Conceptual Framework Based on the Myers-Briggs Type Indicator 97

Bruce, Siu Nang Cheung, The University of Hong Kong
Venus, Wai Ling Yung, The University of Hong Kong
Hong Kong Adult Education Concerns for Internet Technology 105

Renée S. Cole, Central Missouri State University
John B. Todd, University of Wisconsin-Madison
Edward W. Fedosky, University of Wisconsin-Madison
John W. Moore, University of Wisconsin-Madison
Using WebCT to Re-design a Large Lecture Freshman Class 113

Gail M. Darden, Eduprise.com
Edrie Greer, Eduprise.com
Helping Faculty Design Effective Online Courses 119

Dennis P. Donovan, Distributive Training Technology Project
National Guard Bureau Distributive Training Technology Project: Promoting Distributed Learning "Anytime, Anywhere" 123

Charlene Douglas, University of Wisconsin System
Supporting and Hosting Web-Based Learning Systems in the University of Wisconsin System 127

William A. Draves, Learning Resources Network (LERN)
Creating Successful Online Discussions 133

Robert A. Fleck, Jr., Abbott Turner College of Business
Tena McQueen, Columbus State University
Strategies, Protocols, and Policies for Student Management in Online Courses 137

Rob Foshay, PLATO Learning, Inc.
Stella Perez, The League for Innovation in the Community College
Adding up the Distance: Critical Success Factors for Internet-Based Learning in Developmental Mathematics 143

Nicole Gallman, Illinois State University
Steven E. Kagle, Illinois State University
Adapting Traditional Instruction to Distance Learning 151

Corbett Gauden, Jr., University of Texas-Permain Basin
Darcy Hardy, The University of Texas System
The UT System MBA Online Adventure 159

Aline Germain-Rutherford, Trent University
Nelly Halzen, University of Wisconsin-Madison
Collaborative Distance Learning for Advanced French Oral Proficiency in Professional Contexts 165

Andrew S. Gibbons, Utah State University
Jeffrey D. Willden, Weber State University
Model-Centered Instruction: The Web and Simulation 173

Inez M. Giles, University of Maryland University College
Thomas G. Thompson, University of Maryland University College
Building Web-Based Instructors: An Analysis of the Selection, Training, Development and Retention of Faculty During a Period of Rapid Expansion 179

Charles R. Graham, Indiana University
Kursat Cagiltay, Indiana University
Joni Craner, Indiana University
Byung-Ro Lim, Indiana University
Thomas Duffy, UNext.com
Using the Seven Principles of Good Practice to Evaluate Online Courses 187

Gary Greenberg, Videodesk Production
Designing a World Wide Web Project Using Streaming Video 195

Sharon Guan, Indiana State University
Nancy Franklin, Indiana State University
Melissa Hughes, Indiana State University
Transforming Faculty Development Workshops Into Learner-Centered Experiences 199

Darcy Hardy, The University of Texas System
Marta Hubbard, The University of Texas System
Rob Robinson, The University of Texas System
Jennifer Reese, The University of Texas System
Lori McNabb, The University of Texas System
Susan Smith, The University of Texas System
There's Nothing Virtual About It 207

Londa Horton, Strategic Solutions Consulting, LLC
Karen Haywood, Maritz Performance Improvement Company
Captivating Your Audience From a Distance 215

Thomas S. Ingebritsen, Iowa State University
James D. Cheaney, Iowa State University
Problem-Based Learning in an On-line Course: A Case Study 219

Marge Jeffers, Fox Valley Technical College
Robert Hannu, Northcentral Technical College
Jane Manske, Cooperative Educational Service Agency (CESA #11)
Daniel Gross, Southeastern Wisconsin Instructional Network Group (SWING)
Carol Popelka, Cooperative Educational Service Agency (CESA #4)
Glenn Rutgers, Fox Valley Technical College
Instructional Television in Wisconsin: Building From the Grassroots 225

Scott D. Johnson, University of Illinois
Jared V. Berrett, University of Illinois
Jason La Fleur, University of Illinois
Chanidprapa Suriya, University of Illinois
Seung-Won Yoon, University of Illinois
The Relationship of Group Processes to Virtual Learning Team Performance: A Higher Education Experience 231

Leonore Kopitzke, Nicolet Distance Education Network
Michele Nickels, Nicolet Distance Education Network
Interactive Television: A Learning Environment for K-8 Students 239

David G. Kraenzel, University of Wisconsin-Madison
Thomas W. Smith, University of Wisconsin-Madison
Activity-Based-Costing Models: A Constructive "Real-Time Pacing Mechanism" (RTPM) Feature in the University of Wisconsin Model 243

Mollie D. Lawson, Central Missouri State University
Linda Lillard, Central Missouri State University
Patricia Antrim, Central Missouri State University
Susan Morgan, Central Missouri State University
We're in This Together: Librarians as Co-Instructors With Classroom Faculty for Electronic Delivery 251

Andy Lewis, University of Wisconsin Extension
Terry Gibson, University of Wisconsin Extension
Katie Burnham, Society for Nonprofit Organizations
Bridging the Gap Between Practice and Knowledge: The Learning Institute for Nonprofit Organizations 257

José Rafael López-Islas, Monterrey Tech Virtual University
Rosa María Megchun-Alpízar, Monterrey Tech Virtual University
Noemí Ramírez-Angel, Monterrey Tech Virtual University
A Case Study of a Large-Scale Use of Asynchronous, Multinational, Collaborative Learning at the Graduate Level 263

Lee McCaffrey, PNC Bank
Paul Dickerson, PNC Bank
John Martin, Pathlore
Why You Need a Training Management System and How to Get the Right One 269

Martha Mealy, University of Wisconsin Learning Innovations
Scott Reeser, University of Wisconsin Learning Innovations
<XML>Your Course Here</XML> The Implications of Extensible Markup Language for Course Development and Design 277

Henry S. Merrill, Indiana University
Building Online Learning Communities in a Graduate Program in Adult Education 283

Susan D. Moisey, Athabasca University
Use of a Social-Behavioral Model in the Development of a Distance Course for Adults With Vision Loss 291

Michael Molenda, Indiana University
Selecting Pedagogical Methods Based on Learning Requirements 297

Michael Molenda, Indiana University
Ji-Yeon Lee, Indiana University
Jeong-Eun Oh, Indiana University
Satisfying the Stakeholders: Planning With Multiple Constituencies 301

Bríd Moran, Mater Misericordiae Hospital
The Key to a Dynamic Learning Environment: The Mater Misericordiae Hospital–Institute of Healthcare Informatics Experience 309

Glenda Morgan, University of Wisconsin System
Distance Education and Copyright Law: Facing the Challenges 315

Zane Olina, Arizona State University
Dr. Wilhelmina Savenye, Arizona State University
Dr. Herbert Dwyer, McClintock High School
Teacher Training and Support for Web-Supplemented and Web-Based Instruction in Secondary Schools 319

Richard E. Oliver, University of Missouri-Columbia
Linda Butterfield Cupp, University of Missouri-Columbia
Using the Internet to Offer Post-Baccalaureate Continuing Education Units 325

Elizabeth Reed Osika, Purdue University Calumet
Dr. Douglas P. Sharp, Purdue University Calumet
Minimum Technical Competencies Required of Students in a Distance Education Course ... 331

Starr Owen, British Columbia Institute of Technology
Sydney Scott, British Columbia Institute of Technology
BCIT's Management Degree: Innovative Distance Design and Delivery 337

Rena M. Palloff, Crossroads Consulting Group
Keith Pratt, Crossroads Consulting Group
Working With the Virtual Student 341

Michael A. Parmentier, Office of the Under Secretary of Defense (Readiness)
J. Dexter Fletcher, Institute for Defense Analysis
Paul J. Jesukiewicz, ADL Collaboration Laboratory
Philip V. Dodds, Random House Associates
Advanced Distributed Learning in the Department of Defense 347

Mitchell J. Robertson, Southeastern Louisiana University
Linda L. Munchausen, Southeastern Louisiana University
Establishing the Scholarship of Teaching in On-line Courses 353

Farhad Saba, Distance Education Report
Information About Distance Education: Finding What You Need, Quickly and Painlessly! . . 359

Dr. David Sachs, Pace University
Support Services for Online and Distance Education Programs 365

Kathy J. Schmidt, The University of Texas at Austin
Don Olcott, Jr., VCampus Corporation
Integrated Technology Systems Design: A Model for Aligning Pedagogical Quality With Learning Technology 369

Amanda S. Schulze, Arthur Andersen Performance and Learning
Implementing e-Learning Through WBT: A Case Study by Arthur Andersen 377

Rick L. Shearer, The Pennsylvania State University
Dr. Melody Thompson, The Pennsylvania State University
Beyond Single Course Evaluation: An Expanded Approach to the Evaluation of Distance Education Degree Programs 383

Rhonda M. Smith, Florida Distance Learning Reference & Referral Center
Library? What Library? Building Research Requirements Into Distance Education 387

Stephen Smith, Arthur Andersen Performance and Learning
Stephen Boyd, Arthur Andersen Performance and Learning
Wow! They Can See Me: Enhancing Presentation Skills via Videoconferencing 393

Julie L. Strey Johnson, Johnson Controls, Inc.
David Haskett, Johnson Controls, Inc.
Using Multiple Support Strategies to Build Programming Abilities in a Technical Workforce 401

Kay S. Taube, University of Wisconsin-Extension
Barbara Burrell, Northern Illinois University
Sharon R. Nellis, University of Wisconsin-Madison
Patricia A. Lasky, University of Wisconsin-Madison
Evaluation to Strengthen Distance Learning Programs 409

Dan Tobin, Getronics Virtual University
Tina J. Parscal, ISIM University
Standardizing Project Management Practices Using Distance Learning Training to Train a Global Workforce: Getronics Virtual University's Crowning Achievement 417

Audrey M. Turner, Kennedy-King College
Instructional Designs/Strategies for Teaching/Learning via Two-Way Interactive Television in a Multicultural Setting 423

Ellen D. Wagner, Viviance AG new education
Reusable Learning Objects (RLOs) and Personalized Learning: Implications for Design and Development 431

Sally H. Welsh, SkillSoft Corporation
Achieving Higher Levels of Learning in Web-Based Critical Business Skills Training 437

Joe Wheaton, The Ohio State University
Richard Howell, The Ohio State University
John Chovan, The Ohio State University
Sean O'Briant, The Ohio State University
Lack of Accessibility on the Web and the Need for ADA Compliance: Results From One University 443

Penne L. Wilson, University of New Mexico
Charlotte N. (Lani) Gunawardena, University of New Mexico
Ana C. Nolla, University of New Mexico
Cultural Factors Influencing On-line Interaction and Group Dynamics 449

Linda L. Wolcott, Utah State University
Darren Brown, Utah State University
Faculty Beliefs About Rewards for Distance Teaching 457

Charles A. Wood, University of North Dakota
Mike Gerszewski, University of North Dakota
Beyond the Laboratory: Observational Astronomy on the Internet 463

Workshops

Marilyn Barry, Alaska Pacific University
Sharon Sibbald, Alaska Pacific University
Arguing Online: Designing Writing Classes for Interaction 471

Curtis J. Bonk, Indiana University
Vanessa Dennen, San Diego State University
More Advances in Web Pedagogy: Fostering Interaction and the Online Learning Community 475

Charolotte N. "Lani" Gunawardena, The University of New Mexico
Kayleigh Carabjal, Albuquerque Technical Vocational Institute
Constance A. Lowe, The University of New Mexico
Jean Wood, The University of Edinburgh
Models and Methods for Evaluating Online Learning Networks 483

Mary Ann Koloff, Eastern Kentucky University
Ron Yoder, Eastern Kentucky University
How to Organize and Implement Effective Faculty Development for Online Instruction 491

Lynne M. Pachnowski, University of Akron
Steve Mitchell, University of Akron
Creating Alternative Student Assessments for Distant Learning Environments 501

Billie V Strand, University of Minnesota
Fernando A. Senior, University of Minnesota
Sara L. Aase, University of Minnesota
Thomas B. McRoberts, University of Minnesota
An Expertise Buffet: A Team Approach to Online Course Creation 507

Connie S. Wardell, U.S. Army Armor School
George Paschetto, U.S. Army Armor School
Secrets of Success: The Design, Development and Execution of an Award-Winning Distance Course 513

❖ Information Sessions ❖

Best Practices in Strategic Planning and Implementation: Electronic Learning in Louisiana Is Tearing Down the "Silos"

Michael D. Abbiatti
Associate Commissioner for Information and Learning Technology
Louisiana Board of Regents

Denise M. Decuir
Administrative Coordinator for Information and Learning Technology
Louisiana Board of Regents

Introduction

The opportunities and challenges of the new millennium provide excellent opportunities to launch innovations in education that foster change. Perhaps the most visible agent of change to date is the concept and practice of electronic learning, hereafter referred to as e-learning. Through e-learning, Louisiana is leveraging higher education's technical and human infrastructure and is consequently forging a new path of economic development. The state of Louisiana has recognized the value of this new opportunity in spite of difficult economic times; and the state is moving forward with a collaborative strategy that causes established, institution-centric thinking to become much more progressive. The key to the strategy's success is found in the answers to three fundamental categories of questions. This session will provide answers to those important questions and discuss courses of action designed to bring success to the entire e-learning community.

Setting the Stage

Louisiana is moving away from a petroleum-based economy to one that is more diversified. In order to make such a transition, vision, leadership, and a clear plan must be established. Leading the way, Governor Mike Foster has made it clear that education and technology are major interest areas in his second term of office. Using this as a guideline, the Louisiana Legislature has been very supportive: it has exempted higher education from devastating funding cuts that were so common in years past and is now interested in deploying an expansive, state-wide Digital Government Initiative. In addition, Dr. E. Joseph Savoie, Commissioner of Higher Education, has taken the lead in supporting e-learning as a tool to empower and extend the higher education system in Louisiana. The state executive structure is therefore in agreement with, and supportive of, e-learning.

Higher education in Louisiana has a very active Board of Regents' Electronic Campus (BOREC), modeled after the very successful Southern Regional Electronic Campus. The BOREC currently serves over 13,000 students per academic year in its second year of existence. To oversee such instances of e-learning in the state, the Louisiana Board of Regents (representing public community colleges, technical colleges, four-year institutions, and all public professional schools), has established an Electronic Learning Committee (ELC) composed of Chief Academic Officers.

The ELC is responsible for making recommendations to the Board of Regents about all matters pertaining to e-learning. In turn, the ELC is advised by work groups composed of professionals charged with routine campus student services.

Dealing With Reality

Higher education in Louisiana is thus evolving from a rather loosely connected confederation to a coordinated body focused on economic development through educational attainment. The planning process designed to operationalize the focus centered on answering three fundamental questions. The questions are reality-based, success-oriented, and specifically structured to consider the needs of students, faculty, institutions, and citizens.

First, we answer the "what's in it for me?" question. Questions in this category demand answers at the level of student, faculty, institution, and state as a whole. It is safe to say that no program will prove to be sustainable without answering these sorts of questions at each level satisfactorily. The key to Louisiana's answer to these questions is clearly rooted in two facts 1) Louisiana has limited financial resources, and 2) Louisiana's leadership supports e-learning. Louisiana's novel approach provides answers to all three levels: students get access to educational opportunity, faculty get access to innovative training (and money), institutions get access to new student populations (and money), and the state gets a more educated workforce.

Second, we address the "why collaborate?" question simply because higher education institutions are not designed to work together as a matter of day-to-day procedure. The Louisiana Board of Regents has overcome this obstacle by establishing an aggressive position on funding technology initiatives. This position is very specific in that funds are allocated in three categories – the BOREC, the network/network appliances, and training. Campuses gain grant funding through active collaboration. In addition, campuses gain access to new student populations when collaborative environments are in place. The most important gains directly impact the student: collaboration brings about increased access to academic resources, a broader range of opportunities, and a more competitive cost for educational products.

Third, we answer the "how do I collaborate?" question. This question is the easiest to answer. Higher education is in the business of innovating and creatively applying resources. In Louisiana, institutions of higher education merely required a rallying issue and some startup funds to create an atmosphere more conducive to collaboration. The Board of Regents supplied three rallying issues: 1) the reduction or elimination of needlessly duplicated programs, 2) the corollary drive to disseminate unique programs, and 3) the desire to have a positive impact on economic development. Then the Regents funded the deployment of a statewide compressed video network; it funded statewide faculty development; and it continues to provide over $500,000 per year in funding for collaborative programs and training. Although minor changes will take place with time, the overall direction and strategy will remain the same. These actions places higher education squarely in the role of change agent because higher education has the investment in technology, staff, and training; this makes the link between the educational community and other government agencies very direct. With the addition of the Digital Government Initiative, this makes a very natural and profitable environment for change.

Proof of Concept

Although not revolutionary, Louisiana is experiencing clear evolutionary growth. The validity of its strategic plan has been evident in the implementation of the process. In less than three years, the overall initiative has resulted in:

1. An electronic campus enrolling over 7000 students per semester;
2. A policy environment that has done away with geographic service areas and is tackling the most "dangerous" fiscal issues;
3. A decision cycle more appropriate to today's fast-paced requirement for strong leadership at all levels;
4. Hundreds of faculty trained to deliver courseware electronically;
5. National recognition by the Computerworld-Smithsonian Awards Program for excellence in IT utilization to benefit society;
6. A major role in the development of the statewide Digital Government Initiative; and
7. Continued legislative funding during dismal statewide financial conditions.

Summary

Higher education in Louisiana has designed and implemented a technology strategy that optimizes e-learning as a powerful tool for empowering learners. The results of the strategy are proving to be positive and beneficial at many levels.

Biographical Sketches

Michael D. Abbiatti is Associate Commissioner for Information and Learning Technology for the Louisiana Board of Regents. Formerly Director of Distance Education for the Louisiana State University System, Abbiatti was recently awarded the Smithsonian-Computerworld Award in Education and Academia for Visionary Use of Information Technology, is a former recipient of the Applied Business Telecommunications-National Business and Education Award, 1992-93, the United States Distance Learning Association- Most Outstanding Contribution by an Individual K-12 Award, 1992-93, and Electronic Learning Magazine's Distinguished Educator Award, 1991-92. Speaking routinely at the state, national, and international levels, Abbiatti's recent (1999) presentation credits include sessions at the Western Cooperative for Educational Telecommunications National Conference , and the Tri-service Military Distance Learning Symposium. Abbiatti has been a presenter at the University of Wisconsin Distance Teaching and Learning Conference, and the International Congress on Distance Education at Penn State University. He is an alumnus of the University of Wisconsin Distance Education Professional Development Program, and a graduate of the advanced Management of Distance Education (MDE) program sponsored by the Western Interstate Cooperative for Educational Telecommunications (WCET). Abbiatti is very active in the Southern Regional Electronic Campus (SREC), and has been heavily involved in developing collaborative distance learning strategies between higher education and the U.S. military. He speaks from a background that spans successful experience from the classroom to the highest level of decision making in the realm of technology-mediated learning. His most recent task has been to coordinate innovative education and training for LAConnections, Louisiana's Digital Government Initiative.

Address: Louisiana Board of Regents
150 Third Street, Suite 107
Baton Rouge, LA 70801
E-mail: abbiatti@regents.state.la.us

Denise Decuir is Administrative Coordinator for Information and Learning Technology for the Louisiana Board of Regents. She is directly involved with the day-to-day administration and operation of the state's distance education program for higher education. She is also responsible for the organization of statewide technology and distance education training programs, and the coordination of various statewide technology initiatives including the Board of Regents' Distance Education Initiative Grants program. Ms. Decuir is also currently enrolled in the University of Wisconsin-Madison Distance Education Certificate Program.

Address: Louisiana Board of Regents
150 Third Street, Suite 107
Baton Rouge, LA 70801
E-mail: ddecuir@regents.state.la.us

Who's on the Line?
Managing Student Interactions in Distance Learning
Using a One-Window Approach

Marco Adria
Associate Professor of Communications
University of Alberta

Andrew Woudstra
Professor of Management Accounting
Athabasca University School of Business

Managing Change in Distance-Learning Systems

Two dimensions of change affecting distance-learning systems during the last decade have been a dramatic growth in student numbers and a decrease in the cost of the technology of access. The result is a multiplier effect in which larger numbers of students must be served, associated with decreasing per-student costs. With this growth, the management of interaction becomes increasingly important. Requests from students for information and support grow in number. With the ease of access created by information technology, these requests become more rapid and intensive. In short, a growing number of students want more and more information.

In such a state of expansion, faculty members can begin to spend much of their time dealing with individual inquiries from students by telephone, e-mail, conference discussions, and post. Individual attention to students from faculty can be an important part of the pedagogical design of a distance-learning system. However, interactions of this kind must be weighed along with other resources. An optimum use of faculty time should be achieved. In this information session, we challenge the assumption that, to achieve effective use of a distance-learning system, a faculty member must be the primary or front-line contact for students. Organizational structure and design can make a significant difference to an organization's capabilities, and distance-learning systems should be designed with these considerations in mind.

Woudstra and Murgatroyd (1996) suggest that the distance-learning organization of the future will have a small, dedicated core of faculty supported by technology and part-time employees. Athabasca University's undergraduate School of Business has developed such a model for providing individualized distance education. Furthermore, the literature on organization theory suggests that routine tasks should be matched with more highly structured organization structures (Perrow 1970). As tasks become more interdependent and uncertain, the need for flexible coordination mechanism emerges (Thompson, 1967). This paper assumes that a distance-learning system involves a combination of routine tasks *and* interdependent, uncertain events.

On some occasions, distance-learning students will initiate interactions with the system that require routine responses. For example, a student may ask for clarification of what is to be covered on the final examination or may want to obtain the definition of a technical term mentioned in a course text. Either of these inquiries could be resolved routinely, because the student is, in effect, ordering information from the system.

On other occasions, students might initiate relatively unexpected interactions, for which the system must provide a more specialized and tentative response. For example, a student may ask about an apparent contradiction between two theories presented in the course. This inquiry will require the response of an academic expert. The student is not ordering information, but requesting a statement of interpretation. This second type of response from the system will require the coordination of various parts of the system, because uncertain events in a knowledge system must be addressed flexibly. The system must be able to provide a response to the uncertain event by escalating the inquiry to a different pool of experts.

A One-Window Approach to Managing Interactions

In this paper, the actual performance of a university distance-learning system is examined. Using a variation on the conventional design of distance-learning systems, this system placed information generalists (called learning facilitators) as the first point of contact for students. Learning facilitators were made available to students for a period of 35-40 hours per week. This "call centre" received calls, telephone messages, and e-mails from a pool of approximately 2,500 students working in 45 courses. These courses formed part of a suite of self-study degrees in business, administrative studies, and organizational studies offered by the university.

With the assistance of specially designed databases for responding to students, learning facilitators responded immediately to routine or procedural inquiries. If a student initiated an inquiry that the learning facilitator could not, or chose not to, resolve, the inquiry was posted in a database called the "callback conference." Callback conference questions were considered to be in the category of uncertain tasks. The callback conference was checked by professors daily and provided the information that they needed as they prepared to contact the student by telephone or e-mail. Over a period of three months, the total number of inquiries received in several categories was tracked. Learning facilitators providing direct support to students tracked and documented the inquiries received from students by both e-mail and telephone. These were recorded on a hardcopy pro forma during each of the afternoon and evening shifts, then transferred to a database at the end of the day.

We analyzed the number of inquiries in the following categories:

1. Initiated by students through the use of e-mail.
2. Initiated by students using the telephone.
3. Posted to the callback conference for resolution by a professor.

Some 6,700 inquiries were received in categories 1 and 2. It was found that more than four out of every five of these inquiries were in the category of routine or procedural tasks for learning facilitators. These were therefore capable of resolution at the time of the inquiry. This finding should be of interest to distance-learning practitioners and theorists. It challenges the assumption that, to achieve an effective and optimum use of a distance-learning system, a professor, instructor, or academic specialist should be the primary or front-line contact for students.

Results

The number of inquiries was calculated as the sum of telephone calls, telephone messages, and e-mails (columns A, B, and C in Table 1). This total represented both the routine tasks that could be resolved immediately *and* the uncertain tasks that learning facilitators were required to forward to professors for resolution.

Table 1
Inquiries Received by Type and Month and the Percentage Posted to the Callback Conference

Time period	A Telephone calls received	B Telephone messages returned	C E-mails Received	D To Callback Conference	E Percentage to Callback Conference (D/A + B + C)
November 1999	1188	264	490	366	0.189
December 1999	1103	220	389	253	0.148
January 2000	1752	534	767	478	0.157
Total	4043	1018	1646	1097	0.164

The learning facilitators responded to other inquiries that were not included in the calculations because they were by definition always routine tasks. For example, 613 assignments were received during the three months. Learning facilitators processed and relayed these to markers. They were not included in the calculations because there is no potential advantage in having professors deal with these inquiries. The existence of these tasks demonstrates, however, a support activity that learning facilitators can provide to professors and markers. Similarly, "Information" and "Technical Inquiries" were not included in the analysis because they were consistently routine for learning facilitators. Information requests were inquiries by staff and prospective students concerning non-course matters. For example, a prospective student might ask about the content of a course before registering. A learning facilitator would send a course outline to the student by fax or e-mail. Technical inquiries were initiated by students concerning such questions as how to configure a computer or modem. These were inquiries for which a database was maintained to track resolution. No posting was made to the *academic* databases of the callback conference for these inquiries, although learning facilitators did process these inquiries.

Discussion

Column D in Table 1 represents the number of inquiries in the category of uncertain tasks. These were the inquiries that learning facilitators could not, or chose not to, resolve. When the decision was made not to resolve an inquiry, the inquiry was posted in the callback conference. Column E shows the uncertain tasks divided by the total inquiries, to indicate the percentage of inquiries that we categorize as uncertain tasks. The figures for the three months were 0.189 (November), 0.148 (December), and 0.157 (January). The average of the three months can be obtained as follows:

19% + 15% + 16% = 50
50/3 = 17%

Uncertain tasks thus accounted for less than 1 in 5 (17%) of the inquiries initiated by students. Routine tasks, on the other hand, may be expected to account for most of the several thousand inquiries received each year from students in this distance-learning system. If the other routine tasks, mentioned above, were included in the calculation (assignment processing, information inquiries, and technical inquiries), the significance of routine tasks as a percentage of student inquiries emerges. The one-window approach allowed a division of labour that represented a more effective use of individuals' time, because it allowed routine tasks to be resolved immediately while routing uncertain tasks to those who were best qualified to resolve them.

Conclusions

The following conclusions may be drawn from this study. First, designers of distance learning systems should take into account the nature of interactions that take place in the systems they are designing or redesigning. The categorization of student interactions as routine tasks or uncertain tasks is a useful heuristic for probing what actually happens in distance learning systems when students initiate inquiries.

Second, a team approach to the teaching process and an organizational design approach to the distance learning system may allow significant opportunities for improving the effectiveness of a distance-learning system and the optimum use of individuals' time within that system. More thought should be given to the organizational design considerations of distance-learning systems. Innovation in organizational design may increase not only the efficiency of distance-learning systems but also their effectiveness.

References

Perrow, C. (1970). A framework for the comparative analysis of organizations. *American Sociological Review, 32,* 194-208.

Thompson, J. (1967). *Organizations in action.* New York: McGraw-Hill.

Woudstra, A., & S. Murgatroyd. (1996). Responding to change: Designing a flexible learning organization for distance education." Unpublished paper.

Biographical Sketches

Marco Adria and **Andrew Woudstra** each has worked at Athabasca University for more than a decade and has significant experience in the design and evaluation of distance-learning systems. They led a workshop at the 14th Annual Conference on Distance Teaching and Learning entitled "Creating a Virtual Learning Environment with Groupware" (with Konrad Michalski, Kerri Michalczuk, and Colleen Miller).

Address: Dr. Marco Adria, Associate Professor of Communications
Faculty of Extension
University of Alberta
8303 – 112 Street
Edmonton, Alberta T6G 2T4
Canada
E-mail: marco.adria@ualberta.ca
Phone: (780) 492-2254
Fax: (780) 492-0627

Prof. Andrew Woudstra, Professor, Management Accounting
School of Business, Athabasca University
1 University Drive
Athabasca, Alberta T9S 3A3
Canada
E-mail: Andrew.Woudstra@athabascau.ca
Phone: (800) 788-9041, extension 6188
Fax: (780) 675-6338

Creating a Virtual Learning Community

Catherine Ahearn, CPHQ
Director, Quality Management & Provider Information Management Systems
Dental Benefit Providers, Inc.

Commander Rick Blunt
Deputy Director for Learning Technologies
Office of the Assistant Secretary of Defense for Reserve Affairs

Methodology

This Virtual Learning Community study focused on four distinct areas that resulted directly from an initial qualitative survey: (a) providing technologies best suited to reach the desired results, (b) creating an on-line collaborative learning environment, (c) creating a sense of community, and (d) understanding the on-line behaviors of the participants.

Technology

Before conceptualizing the Virtual Learning Community in June 1999, the faculty had three years' experience using Lotus Notes discussion databases delivered to the Internet via a Lotus Domino server. We had no experience programming Notes databases and didn't have time to learn before our first face-to-face Learning Community. We quickly evaluated several collaborative technologies and found that George Mason used the web-based application WebCT (Web Course Tools), for distance learning classes. Specifically designed for web-based learning, WebCT had all the features we needed.

Creating an On-line Collaborative Learning Environment

We integrated technology and design to create an on-line environment that would foster collaboration. This environment contained two collaborative spaces including topic-based discussion forums and an on-line "newsletter." For the first environment of the Virtual Learning Community, the "*Water Cooler*" newsletter, we used FrontPage 2000 on our own personal domain website. The newsletter's first section, "Musings on PSOL Classes," contained reflective articles from each cohort on class experiences. The second, "Who-What-When-Where," detailed what students are doing for their LearnCom projects. The last major section, "Technology and Learning," reported on industry trends in learning technologies.

The second environment of the Virtual Learning Community was the forums (discussion databases) within WebCT. They included discussion spaces pertaining to the next LearnCom topic, which helped get members thinking about the subject. Posting reflections became an academic requirement of the "Learning Community" course. The design of the discussion space for topic-based discussion forums was developed using requirements identified from the initial community survey. This emergent design was balanced against perceived desire by the community to actually engage in topical discussions. Cohort member posting reflected the power and potential of the shared learning forums.

Creating a Sense of Community

The Virtual Learning Community shares many of the characteristics of a Community of Practice. Etienne Wenger discusses three distinct aspects of these informal organizations: community, boundaries, and organizational design (1998). For the PSOL Virtual Learning Community, the "real work" is learning–or, more specifically, learning about organizational learning, through the lens of community and boundaries.

Community. Without mutual engagement from its members, there would be no community. Those who engaged in the on-line discussions are learning from each other through a "… shared space to create shared understandings" (Schrage, 1990). The cohorts negotiated a joint enterprise by collaboratively developing the meaning of the community itself. According to Schrage, "The thing that distinguishes collaborative communities from most other communities is the desire to construct new meanings about the world through interaction with others. The collaborative community becomes a medium for both self-knowledge and self-expression" (1990).

Boundaries. One example of boundary was drawn by default when the invitation to register that day was not extended to alumni. The original qualitative survey shaped boundary decisions by influencing the modularity of offerings to the community. The categorization flowing from the survey reflected the community's interests and different ways of meeting the members' expectations. The balance between the "push" design of the *Water Cooler* and the "pull" design of the discussion forums within WebCT further defined boundaries. The selection of forum topics allowed members to choose where to go to accommodate their learning needs. Through member selections, the boundaries of interests were very evident. As one woman wrote, "I've spent a year 'discussing' in these on-line databases, and I've hated almost every minute of it. I find the medium to be very awkward and isolating. This conversation with you has been the first of hundreds that reaches the level of honesty and intimacy that engages me at a deep level. So, again, thank you for responding so authentically to my uninvited probe. And thank you for showing me that these g. . . damned on-line discussions can be a space for a deep level of learning."

On-Line Behaviors of the Participants

Once the environment of technology, collaboration, and community were developed, we determined the methodology for understanding and tracking the participants' activities. Through the WebCT technology, we tracked the level and type of community activity monthly, as well as the number of posts made and read by each member. We referred to this type of activity as the "verbal and non-verbal" community behavior.

Data Collection and Treatment

As suggested by Luciano Paccagnella (1997) when studying virtual communities, we decided to take a qualitative *and* quantitative approach to the data collection. A portion of the first face-to-face Learning Community was spent in a computer lab where we had every member present fill out an on-line anonymous qualitative survey designed to ascertain the needs and requirements of the community. The qualitative analysis of the data revealed "themes" that were organized into "weighted groupings." The data were further analyzed quantitatively. The groupings and "weights" were displayed in several Pareto charts. From a macro-level, the groupings, and their weights, were combined into "header" groupings in an effort to understand the needs of the community. As Ev Brenner points out, member feedback is a key requirement to building virtual communities: "Many VCs learn what services to provide from the members themselves..." (1999). Additionally, data from WebCT was also tracked on a monthly basis.

Findings

Based on the original community survey results, *category and weight*, the following vision of the Virtual Learning Community emerged: ***Sharing through Technology, with Friendly Professionalism and Respect, on PSOL-chosen Specific Topics.*** The design we chose offered both a "Push" and "Pull" aspect to the Virtual Learning Community. The "*Water Cooler* was "pushed" to each PSOL member via e-mail. The "pull" was the form of the on-line discussion forums (to read the discussion databases, the learner must seek the conversations). If an individual was not interested in the conversation, they could choose another area of interest. The number of posts made and read by each member were tracked monthly (Table 1).

Table 1
Total Posts and Reads

	Sep-99	Oct-99	Nov-99	Dec-99	Jan-00	Feb-00	Mar-00
Number of Posts	488	555	716	810	844	1222	1528
Number of Posts Read	6876	8645	11931	13394	13814	19270	24477

Virtual "Verbal/Non-Verbal" On-line Facilitation Model

From a qualitative analysis of the on-line discussions, it became obvious the norm for participation in the virtual community was through the posted, written word. This form of participation was referred to as the *"verbal."* As a participant-observer, Rick Blunt, moderated and facilitated community discussion by "verbal" participation. He used many of the established techniques for facilitating on-line discussions (Collins & Berge, 1997; Corel & Williams,1999; Crawford,1998; Ogden, 1997).

From the quantitative analysis of the discussion postings, another important *type* of participation became evident: reading postings without responding. From September to November significant increase in reads with no responses were evident. This form of participation is referred to as the "non-verbal" behavior in the community. Starting in November, the intervention of "non-verbal" facilitation began to help us gain insight into the *less obvious* depth of learning experienced in the community. The second researcher, Catherine Ahearn, actively facilitated community participation through "non-verbal" participation. As more members became interested in the discussions, they participated "verbally" more often.

There was close coordination between the two researchers to ensure a balanced approach to this "Virtual Verbal/Non-Verbal" facilitation model. By coordinating the two approaches, more members became interested in the discussions and participated "verbally" more often. From our experience, actively practicing both the virtual verbal and non-verbal modes of on-line facilitation is too much for one person. A distinct advantage to using both "verbal" and "non-verbal" facilitators, is the creation of a dual perspective on the new dynamics in the Virtual Learning Community. From a social constructionist viewpoint, diverse viewpoints of the researchers added to the overall value of the community. Therefore, we conclude that having two facilitators using the virtual verbal/non-verbal model of on-line facilitation helped develop a rich, trusting, and socially enabling virtual learning environment that in turn deepened the sense of community (Figure 1).

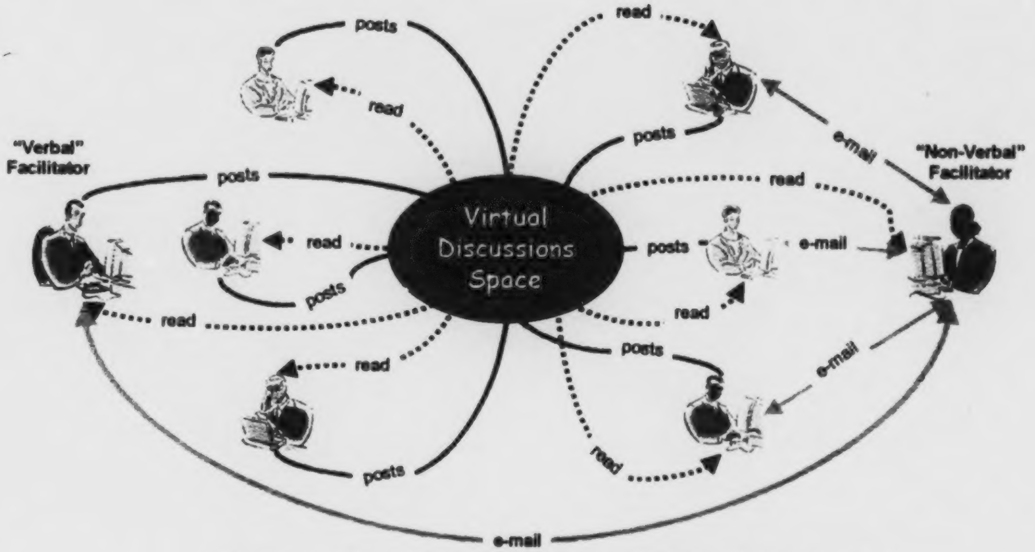


Figure 1: Virtual "Verbal/Non-Verbal" Facilitation Model

Conclusions

Creating the virtual space using collaborative technologies was relatively simple. The challenge was identifying the appropriate environment in which participants/residents would "stake out a claim." The virtual community was designed around the residents' "work and play" needs in a user-friendly, content-rich and socially enabling manner. The study revealed a moderate balance of culture and technologies, which created an enabling environment. Ideas and dialogues were openly shared in a trusted virtual space that enhanced relationships.

BEST COPY AVAILABLE

We developed and successfully practiced the virtual "verbal/nonverbal" facilitation/moderation concept. The on-line model in a shared space brings deeper meaning and context to experiential learning opportunities. During the course of the study we discovered a distinguishing element between the success and failure of a Virtual Learning Community: the ability to identify the right balance between physical (LearnCom) and virtual communication. We found that it's not "physical or virtual," but "physical *AND* virtual." This factor played a significant role in the learning of the participants and the facilitators of the PSOL Virtual Learning Community. Our research indicates that the delicate balance of face-to-face meetings became a crucial portion of the trust building process. Each time the cohorts were engaged and together in a physical space, i.e., common class or workshop, the level of activity and depth of on-line communication increased.

References

Brenner, E. (1999). Second international conference on vcs. *Information Today*. Medford.

Collins, M.,. & Berge, Z. (1997, September). *Resources for moderators and facilitators of on-line discussion.* http://www.emoderators.com/moderators.shtml

Cothrel, J., & Williams, R. (1999). On-line communities: Helping them form and grow. *Journal of Knowledge Management, 3*(1), 54-60.

Crawford, S. (1998). *Organizer participation in a computer mediated conference.* http://www.december.com/cmc/mag/1998/jun/craw.html

Ogden, C. (1997). *Building intentional on-line community.* http://www.deepwoods.com/transform/pubs/Community.htm

Paccagnella, L. (1997). *Getting the seat of your pants dirty: Strategies for ethnographic research on virtual communities.* http://www.ascusc.org/jcmc/vol3/issue1/paccagnella.html

Schrage, M.. (1990). *No more teams! Mastering the dynamics of creative collaboration.* New York: Bantam Doubleday Dell.

Wenger, E. (1998). *Communities of practice : Learning, meaning, and identity.* New York: Cambridge University Press.

Biographical Sketches

Commander Rick Blunt, USNR is the Deputy Director for Learning Technologies for the Assistant Secretary of Defense for Reserve Affairs at the Pentagon. He holds a B.S. from the United States Naval Academy, an M.S. in Management from Lesley College, and a M.S. in Organizational Learning from George Mason University.

Address: 5107 Kenside Court
Annandale, VA 22003
E-mail: rick@bluntgroup.com
Phone: (703) 614-4186
Fax: (703) 697-6072

Catherine Ahearn, CPHQ is the Director of Quality Management and Provider Information Systems for Dental Benefit Provider, Inc. She holds a B.S. from Colorado Christian University and an M.S. in Organizational Learning from George Mason University.

Address: 5820 Robeys Meadow Lane
Fairfax, VA 22030
E-mail: cgahearn@aol.com
Phone: (301) 718-7542
Fax: (301) 654-4288

Don't Just Have Talking Heads

Joyce Allers, R.N., Manager
School Health, Community Health Development & Advocacy
Children's Healthcare of Atlanta

Kimberly Hays, M.P.H., Manager
John N. Goddard Office of Community Benefits
Children's Healthcare of Atlanta

Background/Need for Program

Necessity may be the mother of invention, but financial constraints and widespread audiences also helped create a successful distance learning initiative for lay school health workers across the state of Georgia.

Georgia ranks 42 out of 51 in nationally-gathered key indicators of child health according to KidsCount and the Annie E. Casey Foundation. These indicators include school readiness, child poverty, reading and math scores and births to teens. Over 1,370,555 school-age children live in Georgia presenting enormous healthcare challenges for public school systems without a state-supported school nurse program. (Recent legislation passed to provide funding for nurses in all public schools in Georgia for approximately $18/per child per year. This program begins in academic year 2000-2001.)

Currently, some school nurses, receptionists, secretaries, teachers and parent volunteers provide first aid, dispense medications, and help care for medically fragile children and those with chronic health conditions. Many schools in Georgia's 159 counties do not have designated sick rooms or clinics, presenting additional challenges to caring for children during the school day. School staff and volunteers in Gwinnett County, the largest school system in Georgia, dispense more medications during an average weekday than the county's regional hospital.

Through creative distance learning and other programs and services Children's Healthcare of Atlanta continues to work with school districts across the state of Georgia to meet this major educational need. With over 400 beds in two hospitals, Children's is one of the largest pediatric healthcare systems in the country. Children's treats over 55% of all pediatric patients in the metro Atlanta area.

The programs and services for school health support originate from Community Health Development and Advocacy (CHD&A). CHD&A has a team of five registered nurses who support health care workers and volunteers in over 403 public and private schools in six counties in metro Atlanta. Each school nurse consultant provides information, training and referrals when needed.

Beginning in 1998, CHD&A's school health support team broadcast a distance learning conference to lay school health workers and school nurses. The Georgia Statewide Academic and

Medical System, (GSAMS) is one of the world's largest two-way interactive H.320 video networks. Sites for the lay health worker trainings and the school nurse updates included high schools, state training sites and community colleges and universities.

Program Research and Development

As CHD&A explored more cost effective options for program delivery, team members created a telephone questionnaire for all participants of an on-site First Aid and Medication Administration in the School Setting Seminar held in August, 1998. The opinions of the on-site respondents would help form the content, length and frequency of upcoming distance learning trainings.

The thirty on-site seminar attendees were contacted over a week-long period in March 1999. Twenty-four attendees responded to the 10-question survey.

Respondents were asked to rank their responses as to how helpful the topics were (asthma, medication administration and basic first aid); how much of the information was new; and how much of the information had they actually applied in their school settings. Additional questions covered attendees' preferences on future topics, training methods, length and frequency of trainings and use of the nurse call center at Children's.

Over 70 percent ranked all topics are "very helpful." Medication Administration was the information most often applied in the school setting according to 66 percent of the respondents. As a result of this training, 11 representatives said they established new procedures for medication administration at their schools.

The majority of all respondents (95%) indicated that they would prefer a four-hour video workshop featuring updates on topics such as playground injuries, asthma, seizures and diabetes. An annual teleconference was favored by 58% of the surveyed attendees, with 29% requesting training updates twice a year.

Fun and Games

The results of the survey of traditional classroom determined the distance learning methods in 1999. The two-way capability of immediate audio and visual interaction described previously presented many opportunities for various teaching techniques for each subject on the agenda. The large number of requested topics coupled with the school systems' restrictions on employee training determined the 7-hour length of the distance learning class. This extended length differed from the preferences of the surveyed attendees and presented additional challenges for selecting dates for multiple school systems.

With the demands of a longer seminar schedule, speakers chose their own favorite method to teach within the caveat of "Not Just Talking Heads." Staff agreed that even with very serious topics, some fun was in order. Topics included set-up of a health clinic, documentation, first aid, medicine administration, dealing with two chronic illnesses, infection control. Prior to the day of the workshop room facilitators were given participant packets, first aid, boxes, prizes, certificates, refreshments and evaluations. Staff held an equipment "shake down cruise" at the central site the week before and facilitators were encouraged to visit their sites to make sure that they matched the central training room.

On the day of the conference, facilitators and staff placed arrows and welcome signs to lead site participants to the hidden GSAMS room. Attendees filed in during the test broadcast to bring in the other sites. Cell phone calls solved last minute snafus, and the conference began.

The different presentation styles used included: Discussion with workbook, "Jeopardy" style game, scenarios with props, video, 3-D models with instructions, workbook with discussion, door prizes during evaluations were all used to keep participants engaged. Time for questions after each segment was also crucial for the program's success.

The following list was used to generate further recommendations from attendees of the Madison conference:

- icebreakers within rooms and within entire groups
- how to vary backgrounds, sounds and people
- food and prizes
- varieties of game shows
- small group switchups
- scenario participation

CHD&A facilitators use games such as "There is a Fungus Among Us" and a small group activities to promote lively participation between the sites. Seven hours of togetherness, with important concepts to be learned, challenged them to use a whole new thought process.

Results From the Program Evaluation

There was an 89% response rate (*n* = 69) of attendees to the evaluation of the seven-hour videoconference. Over half of the participants found all topics to be helpful, with Asthma and Head Lice receiving the largest percentage (84%, 83%). Also, over half received at least some new information from all the presentations. Approximately two-thirds of the participants stated that they will apply the information from four presentations most often—Medicine Administration, First Aid, Infection Control, and Asthma.

The communication during the teleconference was judged to be clear by 71% of the audience and the same number state they felt comfortable with their questions being telecast. Nearly 92% selected a video teleconference over a presentation at a Children's campus location. Again, over half of the participants stated they preferred a four-hour video teleconference. Slightly more of the participants (37%) preferred a workshop or teleconference once a year. Twice a year conferences were favored by 34% of the participants. Over 28% preferred a workshop or teleconference once a year rather than more frequently.

Where Are We Going Next?

Program evaluations showed that even though 72% of attendees preferred a class with an instructor as their first choice, 91% preferred a video teleconference to driving to a central location. These findings determined the format of the year 2000 program—a seven-hour teleconference repeated three separate dates at a total of 18 GSAMS sites across Georgia. Each of the three programs will cover eight sites, with seven speakers distributed at as many of the sites as possible. Each room will have a facilitator and possibly one of the speakers. This will put this needed information in the reach of almost one third of the school staffs in Georgia. The costs of a GSAMS conference confirm the need to use this method of reaching more caregivers and making a difference in the health of more school children.

Biographical Sketches

Joyce Allers R.N., is Manager School Health, Community Health Development and Advocacy, Children's Healthcare of Atlanta, which is a 400 bed, 2 hospital, 26 satellite facilities with 320,000 visits per year healthcare system. Ms. Allers has 30 years experience in Health Education serving families and children. She has been in Pediatric Surgery, general pediatrics, labor and delivery, post-partum, newborn nursery, intensive care nursery, taught health education k-12,primary pediatrics, telephone triage, clinical and community educator.

Address: 1680 Tullie Circle
Atlanta, GA 30329
Email: joyce.allers@choa.org
Phone: (404) 929-8427
Fax: (404) 929-8538

Kimberly Hays M.P.H., is Manager, Research, Development and Office of Advocacy Community Health Development and Advocacy, Children's Healthcare of Atlanta. Kimberly Hays leads the team that researches, developments and evaluates all community, school, and pre-hospital care provider health promotion and education programs for Community Health Development at Children's. With 400 beds in two hospitals, Children's is one of the largest pediatric healthcare systems in the country. Ms. Hays has worked in the healthcare field for over 14 years, including two years as a Community Health Worker in the Dominican Republic. She received her master's degree in public health from the Rollins School of Public, and has been with Children's for nearly 5 years.

Address: 993 Johnson Ferry Road, Suite F 360
Atlanta, GA 30342
Email: kimberly.hays@choa.org
Phone: (404) 250-2744
Fax: (404) 257-3274

Learning Strategies Used by Distance Education Students

Mohamed Ally, Ph.D.
Associate Professor
Athabasca University

Introduction

Learning strategies are individual tactics used by students when they learn from instructional materials. These strategies may be unique to each student reflecting individual learning styles. Most students have experience of some type of classroom, group-based instruction. When learning in group-based environment, students develop and apply strategies to learn in the group-based mode. However, when students are placed in a distance education mode, they may have to use different or modified learning strategies to be effective learners in the distance education mode. According to Olgren (1995), students use a variety of cognitive strategies when learning in a self-paced course. Selection strategies are used to focus attention to identify relevant information. Rehearsal strategies are used to remember information by repetition. Organization strategies are used to build connections within the text. Elaboration strategies are used to expand the meaning and to build connections to prior knowledge/experience. This study identifies cognitive learning strategies as well as other strategies learners' use when studying at a distance.

Distance education is defined as the separation, in space and time, between the support person and the student. As a result, there must be a support mechanism to interact with the students. This support can be asynchronous or synchronous. Asynchronous communication involves a delay in the interaction between the instructor and the students. For example, in computer conferencing, the instructor posts a discussion question and the students provide comments at a later time. In synchronous communication, the interaction between the instructor and students is in real time with minimum delay. In the classroom, group-based instruction, most of the interaction between the instructor and students is synchronous. Distance educators need to explore what are effective learning strategies when learning in the distance education mode and communicate these to students. This paper will present results from a workshop that identified learning strategies used by distance education students.

Procedure

A workshop was conducted with twenty-eight distance education students enroled in a distance education graduate program at a university. The students at the workshop were asked to identify the learning strategies they use during the learning process that make them effective distance education students. As the students verbalized the strategies, each one was written on index card and placed on a blank wall so that students could see the identified strategies. After each index card was placed on the wall, the students were asked to confirm whether they use the strategy when they learn in the distance education mode. If the strategy was not worded properly, it was changed to reflect the feelings of the group. If a duplicate strategy was identified, it was discarded. This process was repeated until no more strategies were identified.

Results

The learning strategies generated by the distance education students were summarized in a profile chart. The learning strategies were organized under major headings. The areas and the strategies under each area are listed below.

Learning Process

- Organize information and course materials to facilitate learning
- Read "outside" course materials that are related to the course topics
- Select appropriate assignments topics to relate learning to real life applications
- Arrange support system during the learning process
- Conduct research to obtain information on the learning topics
- Preview course materials to get a sense of course requirements
- Reflect on the information in the course
- Read quickly to cover the reading materials
- Prioritize readings based on the course objectives
- Select important material from the course readings
- Contact researchers and experts to obtain additional information on course topics
- Apply course readings to own professional or personal situations
- Learn from other students' or experts' experiences
- Learn the terminology in the subject field
- Synthesize information from readings and discussions
- Make connections to "real" life situations
- Apply learning to current occupation
- Follow course study guide instructions
- Study topics that cause difficulty at a later time
- Research additional information on difficult topics
- Skim the course materials before the course starts to get a sense of course requirements
- Discuss new ideas with co-workers to get additional feedback/dialogue to clarify concepts

Organization Skills

- Set enough time to complete the course requirements
- Allow for flexibility to devote to the course
- Coordinate course requirements with employer to make sure there is flexibility to complete the course
- Follow the rules and regulations of the school
- Practice "forward thinking" to plan for the unexpected
- Get a head start in the course
- Be self-motivated to complete course activities
- Log-on to check e-mail and other materials regularly (daily)
- Manage time efficiently

- Work independently on course materials
- Practice self-disciplined to complete course requirements on time
- Set personal learning objectives to meet course requirements
- Create comfortable learning environment to complete course requirements
- Arrange time away from home responsibilities to work on courses
- Coordinate schedule to take multiple courses at the same time
- Create personal work plan to meet course requirements
- Prioritize tasks to complete course requirements
- Inform family of course commitments to obtain the time to work on the course
- Get "big picture" of course to plan activities to complete the course
- Stay focused on the course
- Be persistent to complete the course
- Keep up with the course work load to prevent being left behind
- Set clear expectations and sense of direction when working course
- Cope with extenuating circumstances of everyday life
- Organize daily activities to work on course
- Work ahead of course schedule
- Dedicate study time and stick to the time
- Set up a comfortable learning environment
- Commit to complete the course

Assignment

- Use "academic" or accepted writing style
- Conduct internet searches to obtain information for assignments
- Select relevant real life situations to apply the assignment questions
- Write effectively by following the assignment guidelines
- Clarify assignment expectations if required
- Write assignments at the appropriate level
- Proofread assignments

Personal

- Manage stress effectively
- Maintain vision and career goals to keep study in focus
- Be patient when going through the course
- Recognize own learning style
- Adapt learning style when learning
- Determine own effective models of learning
- Maintain a sense of humor when taking courses
- Keep an open mind
- Be compassionate to other students
- Be text oriented
- Adapt to the different delivery modes
- Be an independent learner

- Be disciplined to complete course expectations on time
- Be self-motivated to complete course requirements
- Plan course activities through the semester
- Remain committed to complete course requirements
- Have a curiosity to learn
- Be focused on course requirements
- Be open to new experiences
- Practice time management for assignment completion
- Set internal goals to make sure course requirements are completed on time

Support

- Share new ideas with non-students (other employees or professionals)
- Work with a partner or small group to discuss difficult materials
- Use listserv to obtain information from other sources
- Participate in student listserv to share course information
- Contact instructors for help in courses
- Study in a quiet and comfortable learning environment
- Contact academic advisor to select courses wisely

Interaction/Interpersonal

- Post conference entries to contribute to discussions
- Participate in conferences by reading and responding to other students' comments
- Be confident in ability to contribute to the course
- Be succinct in conference postings
- Present balanced arguments in conference discussions
- Be supportive of fellow students
- Use "netiquette" when using e-mail and the internet
- Work collaboratively in teams
- Learn from others
- Communicate effectively though text
- Provide constructive feedback to other students
- Be willing to share knowledge
- Be open to changing one's views

Technology

- Use reliable technology when completing course requirements
- Use the internet as a research tool
- Obtain the expertise required to use the delivery technology
- Solve basic technical problems

Conclusion

This study identified the learning strategies that are used by distance education students. The next phase of the study will validate the learning strategies by asking distance education students to review the strategies and suggest whether they use these strategies when learning in a distance education mode. The results from this study can be used to orient and train new distance education students how to function effectively in the distance education environment. The results can also be used to help tutors and administrators plan the delivery of distance education courses.

Reference

Olgren, C. H. (1995). *Cognitive strategies in independent learning.* Paper presented at the Third Distance Education Research Symposium, University Park, PA.

Biographical Sketch

Mohamed Ally is an Associate Professor in the Master of Distance Education Program at Athabasca University. He is involved in research to identify competencies for staff who work in different roles in distance education and using technology to support students in distance education.

Address: Athabasca University
1 University Drive
Athabasca, Alberta T9S 3A3
Canada
E-mail: mohameda@athabascau.ca
Phone: (780) 675-6406
Fax: (780) 675-6170

State Educational Institutions Granted Immunity for Patent and Trademark Infringement

Steven A. Armatas, Esq.
Attorney-at-Law
Buckingham, Doolittle & Burroughs, LLP

Introduction

In a decision that surprised many educators, intellectual property attorneys and constitutional scholars, the United States Supreme Court last year expanded the doctrine of sovereign immunity and continued to narrow the powers of the federal government. For over 200 years, it was assumed that states and their instrumentalities and agencies, such as state colleges and universities, were subject, like any other private party, to legal claims alleging patent and trademark infringement. The United States Supreme Court changed all that on June 23, 1999.

Background

Parties and Claims

In two companion cases known as *College Savings Bank v. Florida Prepaid Postsecondary Education Expense Board* (Nos. 98-149 and 98-531), the Supreme Court held that states are immune from lawsuits for patent and trademark infringement under federal law by virtue of the Eleventh Amendment. The cases involved College Savings Bank, a New Jersey bank ("College Savings"), that offered and sold certificates of deposit designed to finance the costs of a college education for the purchasers' children.

College Savings held a patent regarding the methodology of administering these certificates and brought suit against Florida Prepaid Postsecondary Education Expense Board, an agency of the State of Florida ("Florida Prepaid"), for allegedly infringing upon this patent. Florida Prepaid administered a tuition pre-payment program similar to that of College Savings. College Savings also alleged that Florida Prepaid had violated Section 43(a) of the Trademark Act of 1946 (the "Lanham Act") by making misstatements about its tuition savings plan in agency brochures and annual reports.

Arguments

Florida Prepaid moved to dismiss these actions on the grounds that they were barred by the Eleventh Amendment and the doctrine of sovereign immunity granted to States. The case, originally filed in the lower federal courts, eventually wound its way to the U.S. Supreme Court where College Savings argued that Congress had validly abrogated Florida's sovereign immunity in 1992 when it passed the Patent and Plant Variety Protection Remedy Clarification Act ("Patent Remedy Act"). Congress enacted the Patent Remedy Act to specifically clarify that states, instrumentalities of states, and officers and employees of states acting in their official capacity could be the subject of suit in federal court by any person claiming patent infringement.

College Savings also alleged standing under the Trademark Remedy Clarification Act ("TRCA"), enacted by Congress in the 1990s, which subjected states and their instrumentalities to suits brought under Section 43(a) of the Lanham Act for false and misleading advertising. Both statutes were passed in response to lower court rulings which had questioned plaintiffs' rights to sue state entities. Florida Prepaid responded that its sovereign immunity was not validly abrogated under either statute because Congress had overstepped its authority in relying upon Section 5 of the Fourteenth Amendment as its basis for passing such legislation.

Section 1 of the Fourteenth Amendment, more commonly known as the Due Process Clause, provides that no State shall "deprive any person of life, liberty, or property, without due process of law." Section 5 of the same Amendment provides that "the Congress shall have power to enforce, by appropriate legislation, the provisions of this article." In short, Congress believed that patent and trademark rights granted under federal law were legitimate "property" interests that could and should be protected under the Fourteenth Amendment against any person who infringed upon same, including states and their instrumentalities.

The Court's Analysis

Property Interests and Conduct

While acknowledging that patents were legitimate property interests under the Constitution, the Supreme Court held that in order for Congress to invoke its Section 5 power as it did, it had to first specifically identify conduct transgressing the Fourteenth Amendment and tailor its legislative scheme proportionately to remedy or prevent such conduct. In enacting the Patent Remedy Act, the Supreme Court found; however, that Congress had not clearly identified any pattern of pre-existing patent infringement by the States.

State Remedies

In addition, the Court ruled that Congress had failed to take into account the existence or adequacy of state remedies prior to enacting the legislation. As such, the Court basically found that there could not have been a deprivation of property "without due process" as claimants could have availed themselves of state law remedies in seeking redress against potential infringers. The Court even more firmly dismissed College Savings' TRCA claims holding that neither "the right to be free from a business competitor's false advertising about its product" nor a right "to be secure in one's business interests" qualified as a legitimate property interest under the Constitution.

Waiver

Lastly, the Court considered College Savings' assertion that Florida Prepaid's sovereign immunity was voluntarily waived by its willing participation in interstate commerce. On this theory, Florida Prepaid had constructively waived its immunity from suit by engaging in the voluntary and non-essential activity of selling and advertising a for-profit educational investment vehicle in interstate commerce after being put on notice by the clear language of the TRCA that it would be subject to

Lanham Act liability for doing so. The Court rejected this argument by holding that there was no recognized doctrine of constructive waiver of sovereign immunity and that the immunity could only be waived through express statutory language.

Impact

Private Partnering

While seemingly a windfall for state colleges and universities, the *College Savings* decision may carry with it several unintended and negative consequences for these institutions, particularly those fostering distance learning programs. One immediate development may be that private companies partnering with state universities for joint research projects or in the expanding area of delivering distance learning will be much more aggressive in seeking indemnification and contribution from their college partners for potential intellectual property infringement. The Supreme Court decision grants absolutely no protection to these private actors, and, in fact, may well leave them exposed for an entire damage award in a successfully-prosecuted intellectual property suit. If state universities are unable or unwilling to provide such indemnification or similar protection, these arrangements may become less prevalent.

State Immunity

Even those state colleges and universities willing to grant these types of contractual concessions may be precluded by doing so under local law. Some states already bar their agencies and instrumentalities from granting contractual indemnification rights to private individuals and entities. These provisions, even if agreed to by the parties, do little good, however, if the state fails to concurrently waive its right to be sued in state court. A number of states still have not waived their sovereign immunity from suit, and among those that have, the contours of this waiver vary widely. For instance, the West Virginia State Constitution still provides that such State "shall never be made a defendant in any court of law or equity."

Again, without these protections, private companies stand to be the only defendants in patent and trademark claims. While plaintiffs remain free to assert state law remedies in most states, these causes of action are generally more difficult to prove than intellectual property claims and often limit the type and amount of recovery. Since *College Savings* effectively bars plaintiffs from bringing these patent and trademark claims in federal court, the inability to proceed in a state forum may leave aggrieved owners with almost no remedy or recourse against infringers.

Copyright

While *College Savings* makes no mention of its effect on copyright infringement, most legal scholars feel the court's reasoning may be easily applied to such cases. As such, the decision may also make it more difficult for state colleges to obtain permission or licenses to use copyrighted material in their distance learning programs. The remarkable growth of digital technology and the ensuing ability to quickly, accurately and widely reproduce the texts and images of others has already caused many creators and authors to be reticent in granting licenses for their works to educational institutions, which seek these materials for use in regular classroom and distance learning settings. The prospect that these owners may find themselves without a remedy when a state college or university subsequently infringes on their intellectual property by violating the license or otherwise, whether willingly or unintentionally, will likely further dissuade them from entering into these types of transactions.

Faculty/Institution

Lastly, patent and trademark owners, now prohibited from suing state college and universities, may in the alternative seek redress against the individual professors, instructors and students who actually infringed upon their intellectual property. As such, faculty members may, seeing themselves more open to these types of lawsuits, seek greater protection and indemnification from their university employers. This may well exacerbate the growing tensions between faculty and colleges arising from current disputes over intellectual property ownership and related issues and further delay contract or collective bargaining agreements being negotiated between teaching personnel and their state university employer.

Conclusion

In sum, there is probably much more to be written and discussed regarding the Supreme Court's ruling in the *College Savings* cases, particularly its impact on the partnering of state universities and high-tech companies, and whether it was fortuitous or foolhardy to grant these state institutions immunity from patent and trademark infringement claims.

Biographical Sketch

Steven A. Armatas, Esq. is a graduate of Harvard College (B.A.1981) and Harvard Law School (J.D.1984) and has extensive experience in the areas of corporate governance, mergers and acquisitions, federal and state securities law matters and copyright and trademark issues related to businesses and educational institutions. In recent years, Mr. Armatas has served as counsel to several major universities advising them on a variety of contractual and intellectual property issues associated with distance learning.

Address: 4518 Fulton Drive, N.W.
P.O. Box 35548
Canton, OH 44735-5548
E-mail: Sarmatas@bdblaw.com
URL: http://www.bdblaw.com
Phone: (330) 491-5216
Fax: (330) 252-5446

Shifting From Resident to Synchronous Web-Based Training: A U.S. Coast Guard Case Study

LCDR Richard Arnold, USCG
Chief, Design and Development Branch
Performance Technology Center Yorktown

Ms. Rebecca Palmore
Instructional Systems Specialist
Performance Technology Center (PTC) Yorktown

Overview

This paper and presentation describe the U.S. Coast Guard's phased test of live Web-based training (WBT) as an alternative delivery method for providing training and performance support to Coast Guard personnel located throughout the United States. PTC Yorktown tested synchronous (live) WBT using typical Coast Guard courses and instructors, desktop computers, the Internet (home students) and Coast Guard's Intranet, Internet (at-work students) and a commercial off the shelf (COTS) WBT tool. We designed the test to objectively assess if WBT, much hyped in the media but little used in the Coast Guard, is a suitable and cost-effective method to provide training and performance support for our workforce. Our results indicate a resounding yes! Live WBT enabled us to provide high-quality instruction, we measured no significant difference between instructional methodologies and we established a return on investment of over $200K per year for an annual throughput of 750 students. Our test focused on three primary goals. They were:

1. Identify if live WBT is a good fit for given our equipment and culture.
2. Determine any effectiveness differences between WBT and resident instruction.
3. Determine specific costs and benefits tied to this delivery method.

A Phased Test Approach

We examined live WBT during a two-phase test program. Phase I included selection of an appropriate tool and preliminary testing using a small pilot course, a controlled group of students and a rapid prototyping approach. Coast Guard headquarters approved a larger test (Phase II) after reviewing our preliminary results. Phase II built on Phase I by significantly expanding the test to include a variety of skill and knowledge based courses. Our next phase will include regular implementation of courses identified as appropriate for this delivery methodology. That phase will collect long-term cost-benefit and return on investment data.

Phase II team members examined live WBT to see if it measured up in several key areas (it did). It's important to note that we *did not* select courses, instructors, or students that we felt would be "ringers." In other words, courses and personnel were representative of the typical student, instructor and course that comprise the bulk of our resident and unit level training programs. We also used older desktop computers to develop and deliver the course content to ensure the system can be effectively used within the Coast Guard's technology infrastructure.

Phase II Data Collection

The Phase II team conducted monitoring and assessment of the tools and technology, measured student, instructor and technical staff satisfaction, and gathered pre/post test data for both resident and web versions of the same course to compare actual learning. Data results clearly indicated a high level of satisfaction with the tool and the methodology.

1. Do pre- and post-testing for control (resident course) and experimental (web course) groups show equivalent results? *We measured no significant difference between methods. Table 1 displays average aggregate scores. Populations for each comparison were demographically equivalent.*

Table 1

Aggregate Mean Scores

Resident Pretest	45.98
Live WBT Pretest	44.96
Resident Post	90.34
Live WBT post	90.67

2. Student satisfaction. Are students satisfied with the system, approach, instructor performance, and computer access and are they able to participate in live WBT sessions without significant interruption? *They were satisfied, but approximately 40% of the participants experienced significant interruptions when training in their normal work environments. Over 90% of all students queries were satisfied with the method. Of the remaining students, most were neutral in their review. 100 percent stated they would take a live WBT course in the future.*

3. Instructor satisfaction and performance. Can our officer and enlisted instructors adequately use the specific tools and systems to provide quality instruction? Are they comfortable with the technology and approach? Can they replicate success in a virtual web based training environment? *Instructors, when provided with coaching and mentoring, were able to perform at equivalent levels to their resident performance. About 90% of the students felt their instructors were highly effective and well prepared.*

4. Technical team review. Does the software and hardware required work for trainees participating from either the Coast Guard Intranet or from the Internet? *Although we did experience some audio problems when delivering between the Intra and Internets, the tools and methods worked well in either environment. We used approximately 7-15 kilobits per second (kbps) at the client side and about 300 kbps at the server side for a 20 person class.*

5. Cost-effectiveness and potential return on investment (ROI). What are the specific costs associated with this methodology? What can the Coast Guard project for ROI is WBT is widely implemented? *Our initial projections indicate an annualized ROI of $200K for a 750 per year trainee throughput ramping up to over $1.1 million dollars for 3,000 trainees per year.*

6. What specific resources will we require to begin the implementation phase? *We are creating a special project team to guide and plan phase III implementation. The Phase II team has already staffed initial resources and prepared a project scope for Phase III.*

Why Use Live WBT?

Government organizations, companies and academic institutions are tapping into the educational and training opportunities made possible by the desktop computer and the Internet. These organizations use Intranets and Extranets to create a learning culture that supports timely, flexible and cost-effective training and performance support. However, asynchronous (stored/canned) training courses often lack the interactivity and the rich level of response, connection and student to student and student to instructor dialog that are typically the hallmarks of good resident instruction. Converting resident courses to asynchronous delivery may also require significant up-front costs if course developers create self-paced modules with rich levels of supporting media and robust branching.

The Promise of Live WBT

Live WBT corrects many of the problems associated with asynchronous WBT. Course conversion is cheaper, faster and far more flexible, provided the delivery includes a rich level of real-time media (e.g., live instructor audio, two–way document sharing, electronic white-boarding, and text/chat exchange) that both trainees and their instructors can access. The software we procured to conduct our live WBT courses includes these sophisticated features and others. We evaluated several commercial off the shelf (COTS) products for use as the Coast Guard primary live WBT delivery tool. We used three key factors to select our COTS tool. They were:

1. Cost. We wanted a tool that, short of major upgrades, did not require annual license fees, special browser/access fees, or other repetitive costs. Overall cost per student also had to be low.
2. Easy installation, use and management. The COTS software needed to be flexible, easy to install and manage from the distribution side and require minimal action to access by the student/trainee. It had to support highly interactive instruction, easy communications between students and their instructor, student support tools and electronic whiteboarding/document display.
3. Compatible with typical desktop computers at Coast Guard work sites and the Coast Guard's Intranet. Users cannot access the hard drives on Coast Guard desktop computers and every "new driver" requires special approval prior to installation. The software had to be as client-thin as possible due to these and other related hardware computer hardware/software constraints.

Phase II Outcomes

Coast Guard training system center managers quickly realized that live WBT can *significantly* reduce current Coast Guard resident training costs while actually improve training system access and responsiveness for our workforce. In an era of optimal crewing, when even a minor personnel shortfall due to resident training requirements can significantly impact mission readiness, live

WBT offers us the opportunity to provide timely, focused and responsive training without giving up the rich level of interactivity and flexibility found in resident instruction. We were able to successfully deliver training from an instructor's desktop at Yorktown to a wide variety of Coast Guard units, including a ship six miles offshore working buoys! A series of internal white papers, strategic plans and the recently completed Coast Guard Advanced Distributed Learning Plan identify synchronous WBT as a training and performance support method that is well suited for Coast Guard application. Our test results support that position.

Phase III Goals

We've selected several courses for permanent live web delivery based on our Phase II results. The Coast Guard's Director of Training also recently chartered an Advanced Distributed Learning Action team (ADLAT) to help guide distributed learning development, including live WBT, within the Coast Guard. We estimate the Coast Guard can save up to $1.1 million per year by moving 3,000 students to this method of delivery. However, we believe that other more intangible benefits will outweigh the monetary savings. Linking geographically isolated units with support and training resources, enabling instructors to kernalize their curriculum and just-in-time skill and knowledge acquisition are potentially the greatest benefits from shifting courses over to live WBT.

Biographical Sketches

LCDR Rich Arnold is an Instructional and Performance Technologist for the U. S. Coast Guard where he researches, designs, develops, delivers and evaluates alternatives to resident training programs. These include creating and testing cost-effective prototype interactive video teletraining (IVT), web based training (WBT), and computer based training (CBT) courses and electronic performance support systems. He is also an Adjunct Assistant Professor at Old Dominion University, teaching a range of courses including "Technology and Society," "Effective Training Methods for Instructors," and "Distance Learning, Issues and Applications" in resident and IVT formats.

Address: U.S. Coast Guard (Pm)
Training Center Yorktown
Performance Technology Center
Yorktown, VA 23690-5000
E-mail: Rarnold@rtc.uscg.mil
Phone: (757) 898-2016
Fax: (757) 898-2336

Ms. **Rebecca Palmore** is an Instructional Systems Specialist at the Performance Technology Center with extensive experience in designing, developing and delivering multimedia intensive products for the U.S. Army and U. S. Coast Guard. Ms. Palmore currently serves as one of the center's primary CBT/ICW quality assurance and development experts. She is also a key member of the Coast Guard's live WBT implementation team.

Address: U.S. Coast Guard (Pm)
Training Center Yorktown
Performance Technology Center
Yorktown, VA 23690-5000
E-mail: RPalmore@rtc.uscg.mil
Phone: (757) 898-2016
Fax: (757 (898-2336

Accrediting General Education
in Distance Learning Bachelor's Degree Programs

Professor John S. Baker, Jr.
Dale E. Bennett Professor of Law
LSU Law Center

Dr. George Lucas
America Academy of Liberal Education

Accreditation, particularly at the regional level, has thus far labored (through existing consortium arrangements) to establish suitable criteria for institutional best practices and resources that would offer public assurance of the institutional viability, legitimacy, and fiscal probity of distance learning programs. Although these issues are important, the major focus of public concern with distance learning thus far is less on these institutional resource questions than upon the course quality and educational effectiveness of such programs as compared to their conventional counterparts, particularly in the core liberal arts. Accreditation of new and existing programs thus far has not been designed to address these program-related questions in any detail. In particular, while there is substantial evidence that technical and professional subjects can be addressed adequately in an asynchronous, distance format, scholars, government officials, and the general public have expressed doubts that these claims of equivalence will automatically or unproblematically carry over to those liberal arts and general education courses routinely required for any accredited undergraduate degree program. Such courses are thought to depend more upon direct, personal interaction among teachers and students in the development of intellectual capacities and core competencies, than upon a simple mastery of course content.

Distance learning employing the latest available technology has been a factor in higher education since the mail-distributed correspondence courses of the early 19th century. What has changed in the interim is not the basic concept or mission of broad public access to liberal education, but the tremendous increase in access and vastly enhanced interactivity that contemporary technologies afford. Distance learning thus promises to transform the landscape of American higher education dramatically. Innovations in technology have helped increase access to undergraduate degree programs, especially for individuals normally unable to participate in these programs due to scheduling, travel, financial, or even health restrictions. But distance technology is in its infancy. Although anticipation is high about the potential reach and benefit of undergraduate distance education, there is an undercurrent of concern with the quality that these programs are actually providing, and with how course and program quality can best be assessed in this new context.

These concerns center around the imbalance between program development and efforts to standardize program quality. Despite over 400 studies purporting to demonstrate the functional equivalent of courses in conventional and asynchronous distance format, groups such as the American Association of State Colleges and Universities (AASCU) continue to deny the reliability of data indicating whether distance learning programs provide an effective, high-quality alternative to conventional courses and programs.

In response to these concerns, the regional accreditors have responded promptly to monitor the institutional infrastructure of the programs. They have begun establishing agreements on best practices pertaining to institutional accreditation in an effort to assure institutional authenticity and integrity, fiscal probity and reliability, and the adequacy of institutional resources for free-standing institutional programs. Western Governors' University (WGU), has just completed a rigorous accreditation review conducted by the Inter-regional Accreditation Committee (IRAC), an *ad hoc* consortium of the three regional accreditors within whose regions WGU currently offers associate's degrees and articulation credit. In the spring of 1999, the largest of the regional accreditors, the North Central Association (NCA), made national headlines by accrediting a completely virtual, online university offering business communications and other professional degree programs. NCA's executive director, Steve Crow, commented that (from an institutional perspective, at least) the accreditation of distance learning programs raises issues that are, in the main, indistinguishable from those customarily encountered in the accreditation of conventional institutions. At the opening meeting of The American Academy of Liberal Education's (AALE) newly-formed National Coordinating Council, Charles Cook of the New England Association reported on a task force on distance learning within the Council of Regional Accreditors, which, during the past two months, has begun the process of taking up the common institutional and resource questions that the accreditation of virtual universities poses, suggesting that these deliberations will likely continue for years to come.

All participants in the dialogue, however, continue to acknowledge that significant issues of educational effectiveness remain unaddressed (and provide fuel for controversy) in this emerging medium. Shortly after North Central's decision to accredit Jones International University, for example, the accreditation committee chairman of the American Association of University Professors (AAUP) denounced NCA's decision to "define any kind of institution as a higher-education institution." Months later, the U. S. Department of Education's National Advisory Committee on Institutional Quality and Integrity (NACIQI) provoked further controversy by questioning whether a recognized accreditor's experience evaluating conventional academic programs automatically justifies its authority or expertise to accredit distance learning programs. Most recently in her newly-released monograph, "Core Academic Values, Quality, and Regional Accreditation: The Challenge of Distance Learning," Judith Eaton (president of CHEA) listed six challenges to six core values of higher education posed by distance learning, among which she cited "general education" as the area posing perhaps the most important, but also the most intractable and thus far least addressed of the difficulties posed for quality assurance and accreditation. In his keynote address to the opening meeting of the National Coordinating Council of the American Academy of Liberal Education (AALE) on May 16, 2000, Assistant Secretary of Education, Lee Fritschler, likewise cited the challenge of "Cyber U." to "Site-Based U." in the delivery of core liberal education courses as the major, unaddressed challenge facing the accreditation community in this decade.

Approaches to distance learning derived from conventional institutional accreditation seem to beg an important question. While a certain number of new "virtual universities" (e.g., the new Open University operation headquartered in Delaware, and Kentucky Commonwealth Virtual University) make their appearance each year, the majority of new distance learning programs are not being developed or offered as new, freestanding organizations requiring institutional review.

Rather, the majority of such programs are offered as expanded programs of institutions already fully accredited by their appropriate regional agency. The kinds of questions raised repeatedly by a skeptical professoriate, congressional critics, and others concerned with these new developments in higher education are thus *not* primarily institutional questions about legitimacy or viability, but focus instead upon the *academic quality* of the courses and programs offered. Distance learning is often offered as an alternative (and hence presumably equivalent) path to an institution's already-accredited degree program, thereby escaping independent scrutiny. The University of Maryland's venerable University College, advises that—despite its internal focus on the rigorous learning outcomes assessment of each of its courses and programs—it is presently required only to report inputs (curriculum offerings, course syllabi and descriptions) to the Maryland Higher Education Commission (MHEC). Neither MHEC nor the Commission on Higher Education of the Middle States Association, the University of Maryland's regional accreditor, requires specific evidence of educational effectiveness or learning outcomes assessment of these alternative-format programs (since these are offered within the already-accredited university).

In sum, public quality assurance is less likely to concern questions of institutional integrity or the adequacy of institutional resources than questions about the academic excellence of core undergraduate courses and programs. In April, 1999, for example, the Institute for Higher Education Policy (IHEP) released a detailed report challenging what they characterized as the selective and anecdotal quality of much of the assessment research on distance learning. IHEP charged that the bulk of this research has not been disinterested, but has been undertaken to support the unregulated expansion of distance education by suggesting that there is "no significant difference" between courses and degrees delivered in such programs when compared to conventional, institutional-based programs involving scheduled classroom seat time. Since then, the *Chronicle of Higher Education* and leading national newspapers have featured an unending stream of articles and reports disputing the program quality and educational effectiveness of distance learning courses and programs. Dr. Peter Ewell, however, argues that the technical shortcomings of current research on the learning effectiveness of distance learning programs in fact apply equally well to "published research about virtually *every* method of instructional delivery including, quite noticeably, the classroom-based ones we presently use" (*Change*, May/June 1999, p. 4). The point is not automatically to distrust or denigrate the effectiveness of *merely the newest forms* of instructional delivery, but to acknowledge that we have had a longstanding problem with evaluating and assuring the uniformity and effectiveness (particularly through accreditation) of our *existing conventional forms* of education. We can logically expect, therefore, to encounter problems whenever new forms of educational delivery arise and the consequent need to address them.

Biographical Sketch

John S. Baker, Jr., J.D. University of Michigan (1972), is the Dale E. Bennett Professor of Law at Louisiana State University Law Center where he teaches Constitutional Law, Criminal Law, Federal Courts, and Jurisprudence. Professor Baker is director of the distance-learning project for the American Academy of Liberal Education, which is the only national (as opposed to regional) accreditation agency recognized by the U.S. Department of Education for undergraduate-degree programs. He is the academic liaison from the LSU Law School to the Louisiana Board of

Regents' Distance Learning Initiative. Professor Baker has been involved in distance learning since teaching college-credit courses in 1990 on American Government, which were distributed live via satellite. He has been a consultant on the video-conferencing aspects of "Courtrooms of the Future."

Address: Paul M. Hebert Law Center
Room 414
Louisiana State University
Baton Rouge, LA 70803
E-mail: jbaker@lsu.edu
URL: www.law.lsu.edu
Phone: (225) 388-8846
Fax: (225) 388-5935

How to Correlate Multi-Media Presentations With Interactive Student Guides: Design Techniques

Felicie M. Barnes, Ed.D.
ETS – Instructional Design and Evaluation
Grambling State University

Augusta A. Clark, Ph.D.
Associate Professor
Grambling State University

An interactive study guide (ISG) is a "highly organized set of student notes, graphics, pictures, graphs, charts, clip art, photographs, geometric shapes, activities, problems, and exercises" (Cyrs, 1997, p. 103). It is used in conjunction with a lecture and is pre-planned with "key notes, which require fill-ins, phrases or other visual materials…" (Cyrs, 1994, p. 12-12). The ISG is beneficial because it serves as an advance organizer; cues students to key points; improves student note-taking skills; encourages interaction and participation through fill-ins and small group activities; informs, manages and directs student in-class and out-of-class individual and group activities; and assists students in easy, fast reviews (Cyrs, 1994, 1997; Cyrs & Smith, 1990). It is meant to "show relationships and links among ideas and data" (Cyrs, 1997, p. 103). The ISG is "more systematically designed, more comprehensive, more highly structured than other types of handouts" (Cyrs, 1997, p. 101).

The methods to create an ISG in distance learning are well documented (Cyrs, 1994, 1997; Cyrs & Smith, 1990; Simonson, Smaldino, Albright, & Zvacek, 2000). The steps include: (a) Identify learning objectives; (b) create topical outline; (c) highlight key words; (d) create word pictures using geometric shapes or clip art; (e) replace key words with an underline for student fill-ins; (f) sequence and number displays; and (g) review for accuracy, grammar, and usage (Cyrs, 1997).

Once the ISG is designed, however, little is written on how to correlate a multi-media presentation with the ISG. This article fills the void by examining and discussing design techniques to correlate an ISG with a multi-media presentation.

Instructional Multi-Media

Instructional media is the means by which the instructional message is conveyed visually. This multi-media discussion is limited to the two instructional media most often available to instructors in the classroom:

- *Document camera* is a " video camera mounted on a copy stand [flat surface] …pointed downward at …documents, pictures, graphics, and real objects" (Heinich, Molenda, Russell, Smaldino, 1999, pp. 150, 404).
- *Computer-generated slide show presentations* are slides created and shown using a computer software package (e.g., Microsoft's PowerPoint or Lotus's Freelance Graphics).

How does one decide which of the two to use in a multi-media presentation? The selection of effective instructional media is based on the visual impact that the media will have on the learner's imagination, attention, feelings, and comprehension. For example, the same software package that generates the slide show could be used to print individual slides for viewing on the document camera. The question becomes: Is the visual message best conveyed through sound, color, and animation (i.e., slide show) or through a still or object display (i.e., document camera)?

Although the slide show adds depth and dimension through special effects, the document camera is advantageous because it is a versatile medium that provides learners with abstract and concrete visualizations and provides instructors with the latitude to make spontaneous responses and actively engage learners. For example, the use of document camera includes: (a) On-the-spot projection of readily available classroom materials (e.g., maps, newspapers, illustrations or tables from books and magazines), (b) magnification of three-dimensional real life objects for close-up inspection, (c) discussion of student work with group viewing (Heinich, et al., 1999), and (d) display of timers to maintain time on task for in-class activities.

ISG and Multi-Media Correlation Techniques

Superior design produces effective, efficient, quality instruction and visa versa. The same is true for the design of the ISG and the multi-media visuals. There are many instructional design models from which to select, for example: (a) The classic nine stage "systems approach model for designing instruction" developed by Dick and Carey in 1978; (b) the "courseware design model" developed by Roblyer and Hall in 1985; and (c) the eight-step "model for developing computer-based instruction" by Alessi and Trollip in 1985. Most models, however, contain three major stages: (a) Analysis (i.e. learners, outcomes, conditions); (b) development (i.e., specify instruction strategies and media, create or select tests and instructional support materials); and (c) evaluation (i.e., formative and summative) (Gagne, Briggs, Wager, 1988; Knirk & Gustafson, 1986; Roblyer, 1988). Progression through these stages provides a framework to systematically examine instruction; however, good design principles and research-based practice must be applied to the design in order to produce effective instruction.

For example, research suggests that dual modalities enhance learning (Fleming & Levie, 1978; Rigney & Lutz, 1976); therefore, the ISG and multi-media visuals should be designed and correlated to stimulate learning through dual modalities (i.e., visual, combined visual, auditory, kinesthetic). The process to correlate dual modalities is fluid allowing the instructor to make continuous decisions. Each of three components—ISG, multi-media visuals, and correlation between these two—has design principles that impact instructional effectiveness.

ISG

The ISG is an advance organizer for the lecture reviews (Cyrs, 1994, 1997; Cyrs & Smith, 1990; Simonson, et al., 2000). The document camera can show more detailed information than the slide show; however, both are only visual "snap shots," and thus, do not readily convey the flow and relationship between the information presented. ISG desktop publishing design guidelines include (McClaran & Parker, 1988):

1. Balance text, visual and graphic elements for ease of comprehension.
2. Use consistent layout (i.e., space, title or capital heading case).
3. Use adequate white space and a balance of dark tones (e.g., bold type, accent bands) and gray areas (body copy, tint screens, photos) with minimum margins of 1/2 inch to frame text body.
4. Avoid clutter (e.g., excess boxes, tint, shadow effect, bands, borders).
5. Use simple, legible, consistent, adequately sized font (e.g., arial 12-point font), and limit use of italic or bold-weight typeface.
6. Select headline type and size that contrast with body copy.
7. Use subheadings to break long expanses of body.
8. Use bullets to emphasize points and boxes, thin lines, or a graphic to organize content.

Visuals

The instructional message is more effectively and efficiently conveyed to the learner when visuals conform to general design guidelines (Cyrs, 1994, 1997; Cyrs & Smith, 1990; Heinich, et al., 1999; Simonson, et al., 2000):

1. Ensure legibility (e.g., size, font, color and contrast, alignment, letter case, aspect ratio).
2. Reduce effort needed to interpret message (e.g., pattern, proximity, consistency, background contrasts).
3. Increase active engagement (e.g., novelty, textures, interactive features, color schemes).
4. Focus attention (e.g., directional guides, design, color cues).

For a slide show, text is in a capsulated form or graphic depiction (word picture). Cues such as color, motion, and sound are used to direct the learner's attention and highlight key elements or concepts (Alessi & Trollip, 1985; Jonassen, 1998; Cyrs, 1997).

Correlation

The correlation techniques are derived from the design of computer-assisted instruction and from practitioners' experiences:

1. Pacing is the rate of speed at which information is presented. A change of pace maintains attention. Introduce new materials slowly and review materials faster (Cyrs, 1997, 1994). Vary media to vary pace, for example, change from a "high tech" slide show to a "low tech" document camera display.
2. Fill-ins are used as prompts and cues in the ISG. Animation, color, and sound may be used as prompts and cues in the multimedia. Avoid over prompting by limiting this effect to the most salient points.
3. There should be clear transitions between topics. Topical transitions in the ISG are emphasized in ISG through text style (bold, italics) or effects (shadow, underline). Topical transitions are emphasized in multimedia by a change in transition slide effects

(e.g. "cover up left" to "split horizontal in") or by a change in animation effects on individual slides (e.g., from "wipe left" to "peek from bottom").

4. Dual modes in ISG involve visual and kinesthetic (fill-ins or circles). Dual modes in multimedia involve visual, combined visual, and auditory (sound).
5. Group activities are detailed in ISG. Group activities are summarized and monitored through multimedia visuals. Time monitoring for in-class activities can be accomplished by displaying on the document camera a timer atop activity instructions.

Pulling It All Together

The principles are applied in Figure 1 to illustrate the ISG, multi-media, and correlation design techniques discussed. In using these techniques, continually ask on question: Does this visual support an instructional purpose and visually impact the learner's imagination, attention, feelings, and comprehension?

Students are coming to college more visually sensitive; therefore, it is imperative that dual modalities, especially combined visuals, be incorporated in effective teaching strategies to meet all learner sensory preferences. In addition, students are required to learn more and more complex information that requires the teacher to more efficiently present massive amounts of information that can be quickly processed and learned. The guidelines to correlate the ISG and instructional multimedia produce a "robust" learning experience; subsequently, the teacher and learners can meet the demands of teaching and learning in the "information age."

References

Alessi, S. M., & Trollip, S. R. (1985). *Computer-based instruction: Methods and development*. Englewood Cliffs, NJ: Prentice-Hall.

Cyrs, T. E. (1994). *Essential skills for college teaching: An instructional systems approach*. (3rd ed.). Las Cruces, NM: New Mexico State University.

Cyrs, T. E. (1997). *Teaching at a distance with the merging technologies*. Las Cruces, NM: New Mexico State University.

Cyrs, T. E., & Smith, F. A. (1990). *Teleclass teaching: A resource guide*. Las Cruces, NM: New Mexico State University.

Gagne, R.M., Briggs, L.J., Wager, W.W. (1988). *Principles of instructional design*. (3rd ed.). New York: Holt, Rinehart and Winston.

Heinich, R., Molenda, M., Russell, J. D., & Smaldino, S. E. (1999). *Instructional media and technologies for learning* (6th ed.). Upper Saddle River, NJ: Prentice Hall.

Fleming, M., & Levie, W. H. (1978). *Instructional message design: principles from the behavioral sciences*. Englewood Cliffs, NJ: Educational Technology Publications.

Jonassen, D. H. (Ed.). (1988). *Instructional designs for microcomputer courseware*. Hillsdale, NJ: Lawrence Erlbaum.

Knirk, F. G., & Gustafson, K. L. (1986*). Instructional technology: A systematic approach to education*. New York: CBS College Publishing.

McClaran, J. L., & Parker, R. C. (1988). *Do's & don'ts of desktop publishing design*. Ann Arbor, MI: Promotional Perspectives.

Rigney, J. W., & Lutz, K. A. (1976). Effects of graphic analogies of concepts in chemistry on learning and attitude. *Journal of Education Psychology, 68*, 305-311.

Roblyer, M. D. (1988). Fundamental problems and principles of designing effective courseware. In David H. Jonassen (Ed.), *Instructional designs for microcomputer courseware* (pp. 7-32). Hillsdale, NJ: Lawrence Erlbaum.

Simonson, M., Smaldino, S. Albright, M., & Zvacek, S (2000). *Teaching and learning at a distance: Foundations of distance education*. Upper Saddle River, NJ: Prentice-Hall.

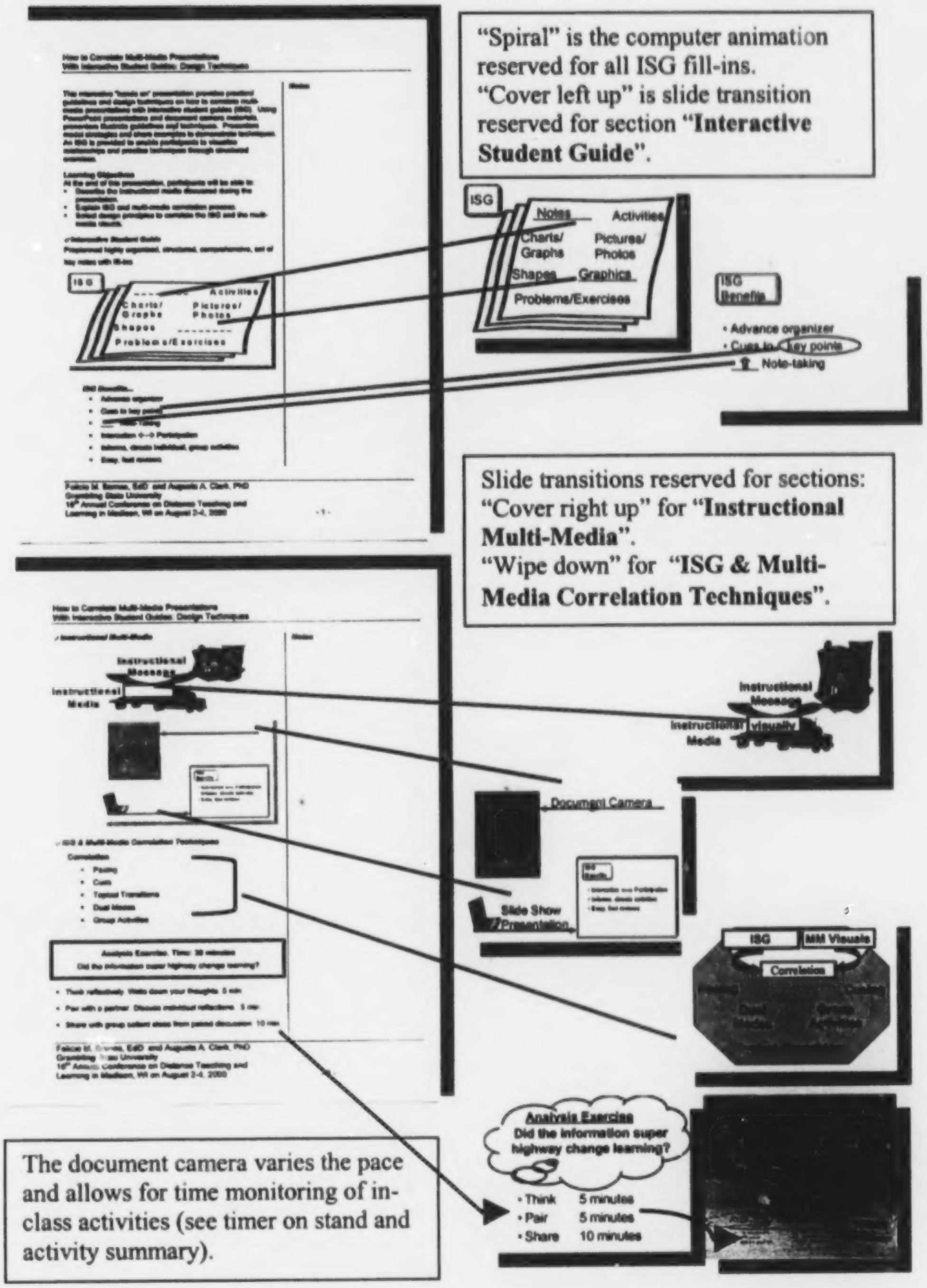
Biographical Sketches

Felicie M. Barnes is employed by Grambling State University as an educational television specialist with primary responsibility for instructional design and evaluation of distance-delivered courses. She trains faculty and leads design teams. She has served for two years on the Electronic Learning Committee, a Board of Regents appointed committee that makes recommendations on issues and policies related to electronic delivery. She has nine years experience in faculty development and instructional design using satellite, compressed video, and more recently web-based delivery platforms. She has designed and team taught graduate technology education courses via compressed video with web-based supplements. She has designed and taught faculty institutes and has led design and development teams for distance-delivered courses for 14 academic departments. She has authored $1.2M funded grants, and has directed instructional design and faculty development activities for projects funded in excess of 1.9M. She has presented 14 papers at state and national conferences. She received her EdD from Grambling State University and has more than 27 graduate credit hours in instructional design and technology.

Address: GSU Distance Learning Program
Grambling State University
P. O. Box 404
Grambling, LA 71245
E-mail: barnesf@alpha0.gram.edu
URL: http://www.gram.edu
Phone: (318) 274-6134
Fax: (318) 274-3761

Augusta A. Clark is Associate Professor of Education in the Department of Educational Leadership at Grambling State University. She has more than 30 years experience in the field of education ranging from teacher, counselor, district administrator, community school director, high school principal, vocational director, and college professor. For three years, she has taught graduate courses via compressed video with web-based components. She has presented at more than 12 state, regional, and national conferences, and has conducted over 25 workshops for educators.

Address: Department of Educational Leadership
Grambling State University
P. O. Box 404
Grambling, LA 71245
E-mail: deed631@hotmail.com
URL: http://www.gram.edu
Phone: (318) 247-8972
Fax: (318) 274-2799



"Spiral" is the computer animation reserved for all ISG fill-ins. "Cover left up" is slide transition reserved for section **"Interactive Student Guide"**.

Slide transitions reserved for sections: "Cover right up" for **"Instructional Multi-Media"**. "Wipe down" for **"ISG & Multi-Media Correlation Techniques"**.

The document camera varies the pace and allows for time monitoring of in-class activities (see timer on stand and activity summary).

Figure 1. Illustrations of techniques to correlate ISG and multi-media

BEST COPY AVAILABLE

Conversion of an Intensive Clinical-Based On-Campus Program to a Web-Based Distance Learning Format: The Veterinary Technology Distance Learning Program

Dr. Robert (Pete) Bill
Director of Veterinary Technology Distance Learning Program
Associate Professor of Veterinary Pharmacology
Purdue University School of Veterinary Medicine

Properly educated Registered, Certified, or Licensed Veterinary Technicians play an incredibly important role on the modern veterinary medical team. At Purdue University our current on-campus program is only able to turn out 1/8th of the veterinary technicians needed in Indiana and the surrounding states (based upon number of requests for RVTs versus number of graduates).Because the on-campus program has a high per-capita cost to the university for education and clinical training, and because physical limitations of the Veterinary Teaching Hospital referral center preclude further number of students rotating through it, significant expansion of the on-campus program was deemed unlikely. Therefore, the need for an alternative, yet similarly rigorous, educational/training route was needed. From this need has arisen the Veterinary Technology Distance Learning Program (VT-DLP).

Priority #1:High Standards set by On-Campus Program Must Be Maintained in VT-DLP

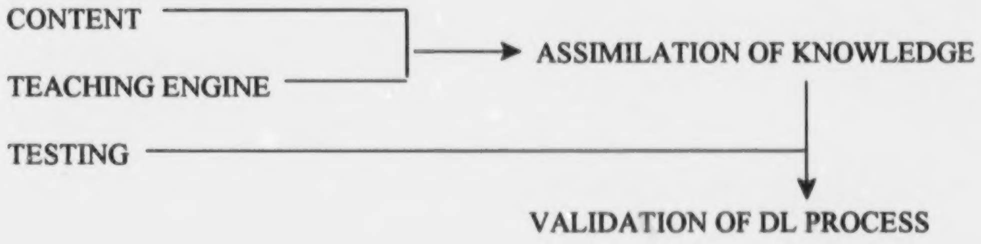
Currently there are 86 Veterinary Technician programs accredited by the American Veterinary Medical Association (AVMA).AVMA accreditation is essential for veterinary technician programs as graduates of VT program are only able to be licensed, certified, or registered in that state if they had graduated from an AVMA accredited program. In order to become accredited, a veterinary technology program must teach certain topics, provide instruction in a long list of motor tasks called *Essential Skills*, and provide student resources and physical facilities deemed necessary to deliver quality instruction. Because distance learning is a new modality for educating veterinary technicians, AVMA is still in the formative stages of determining how to accredit DL programs without compromising accreditation standards.

In addition to meeting AVMA's accreditation standards, the Purdue VT-DLP must meet the standards set by Purdue University's on-campus veterinary technology program. Purdue's program is only one of two programs offered within a school of veterinary medicine (Michigan State being the other).All other AVMA accredited programs are offered at junior colleges, community colleges, a few agricultural 4-year institutions, and a couple of proprietary institutions. This means that veterinary technicians in the Purdue on-campus program have clinical rotations through the referral hospital and receive a great deal of hands-on experience.Because of this unique opportunity for hands-on experiences, Purdue veterinary technician student have the opportunity to perform motor tasks that go beyond the Essential Skills tasks required by AVMA.In addition, the veterinary technicians in the Purdue program receive their didactic lectures from veterinary school faculty who are discipline experts in each of their fields (parasitology, pharmacology, physiology, anatomy, etc.).This is different from the majority of other vet tech programs wherein one or two veterinarians and a small number of veterinary technicians teach all aspects of the curriculum.

Therefore, because of the reputation of the training, education, and experience that Purdue on-campus veterinary technician students have upon graduation, the 1st priority for Purdue faculty, staff, and veterinary technician alumni was that the VT-DLP be every bit as rigorous and require the same high standards as the on-campus program.

Didactic Components Delivered by the Web

The current director of the VT-DLP has a joint PhD in education and in veterinary pharmacology. This provides the VT-DLP with the unique opportunity to have someone who is familiar both with the veterinary content and the principles underlying efficient and effective education. Towards that end, a three component model was developed for all courses to be delivered by the Web.



This model was developed to remind us that it was not the software or the technical hardware that was driving the education, but the educational concepts and content that created the learning opportunity.

The *CONTENT* could be any body of knowledge in any format. For some courses we used a textbook, for others the notes were put on line for downloading, or pressed on a CD for distribution. An important point to make here is that the content was *not* intended to be read off of the Web site. Our observation is that humans still like to hold their reading materials in their hands (like this Proceedings you are reading!). Because students often download and print off content materials from the Web anyway, we felt it best not to place the content on the Web site in the first place. Therefore, the format of the content was selected on the basis of:

1. What was the most reliable for delivery and use by the student
2. What was easily accessible by students everywhere
3. What format lent itself best to understanding the content (e.g. highly visual vs text)

This philosophy allowed the instructors to use "traditional" content materials if they so desired. This helped ease some of the faculty instructors into the distance learning modality because it made them feel that they didn't have to throw out everything they had done before.

The *TEACHING ENGINE* is the key to this distance learning model. Essentially, the teaching engine poses a clinical question to the student, the answer of which can only be found in the *content*. The *teaching engine* is critical because it provides the impetus, the extrinsic motivation for the student to engage the content. Human nature is such that no one sits down and reads the Encyclopedia Britannica from beginning to end. Instead, people engage content when they have a need to know something; when they have a question. The teaching engine is designed to create those questions so that the student has a perceive reason to learn a component of the content.

For example, the first pharmacology course is composed of 250+ clinical scenarios or clinical drug-related questions that can be answered by understanding specific sections of the content (in this case, a textbook).The questions that constitute the teaching engine are on the Web site (students typically print out hard copy for themselves to study). A typical clinical question might be a Web page showing two different types of drugs and having the student explain why one drug would cause vomiting and the other would cause a slowed heart rate as their side effects. Students enter their response, submit it for evaluation, and receive feedback from the instructor.

In other courses, Web-CT is used to pose the question and provide some automated feedback to the students. This is especially useful in terminology identification and mathematical problems like dose calculations. The teaching engines of the newer courses are likely to be a combination of Web-CT automated responses and HTML-programmed Web site questions that require the instructor to review and respond.

TESTING is currently being done using paper and pencil. Testing on-line won't be done on a large scale basis until some issues related to security can be worked out (e.g., Is the student taking the exam *really* the student? Is the student taking a closed-book exam open-booked?).Typically exams are either sent to students at particular intervals, or students request exams when they reach a certain point in the teaching engine sequence. The exams sealed within a double envelope and sent to the student by regular mail. The student receives and opens the outer envelope, and takes the inner sealed envelope to their examination proctor. Their examination proctor can be a veterinarian, accredited veterinary technician (registered, licensed, or certified), or a licensed and practicing educator at a school, college, or university. The proctor provides a place for the student to take the examination and insures that the student does not take books or notes into the examination. The proctor opens the inner envelope and gives the exam to the student. When completed, the student gives the exam back to the proctor who then seals it in a stamped addressed envelope, signs and indicates their professional affiliation on the back of the envelope, and sends the exam back to the Purdue VT-DLP.

Although this system works well, we did have a suspected case of cheating with two students who were from the same geographical area and took the examinations at the same time in the same room, unmonitored by the proctor. AVMA may require same day testing, multiple forms of tests, and/or use of certified testing centers (Sylvan Learning Centers, etc.) to increase test security. Realistically, we find that students who might be motivated to cut corners (cheating, doing just enough to get by, etc.) don't have the self-determination, the self-motivation, or the self-discipline to finish an entire distance learning program.

Converting a Anatomy Laboratory Experience to the DL Format

Questions that most commonly arise regarding the VT-DLP are: How do you teach anatomy dissection? How do you teach a student to put in a catheter or draw blood? How do you teach the student to do restraint? etc. etc. The answer is: *We don't necessarily teach; we facilitate the achievement of the learning goal, and validate that the student has indeed achieved it.*

In the traditional model of anatomy, students dissect cadavers with the intent that this will translate into the student acquiring a 3-dimensional cognitive model of the location of important anatomical landmarks. But if asked, "What do you want to student to be able to do after completion of your course." the answer is more often a description of the process, not the educational goal: "I want the student to be have completed their dissection and learned anatomy."If, however, we do a *task analysis* and *goal analysis* (ala Dick & Carey model of instructional design), we are freed to think "outside the box" to arrive at the educational goal. If the educational goal in anatomy is truly to create a 3-D cognitive model of anatomy, then dissection is not the only way in which this can be achieved (use of graphics, 3-D images, using one's own pet for palpation, etc.).Indeed, by re-thinking his course and re-approaching his educational goals in a more creative and less traditional manner, the anatomist teaching the VT-DLP anatomy course felt the students arrived at this same cognitive goal without touching a cadaver specimen.

Therefore: the focus MUST be on how to achieve the outcomes and goals instead of reproducing the same on-campus process. Getting faculty, staff, administration, and accrediting agencies to think in this way has been the single greatest challenge in the development of the VT-DLP.

Converting Clinical Rotation Experiences to the DL Format

An even larger challenge was how to insure that the students at a distance received an equivalent clinical educational experience to that received by the on-campus students. The clinical experience in the veterinary teaching hospital is the strength of the Purdue on-campus program, therefore, faculty, staff, and administration demanded that this not be diminished in the VT-DLP.

The solution was again a thorough task analysis of each on-campus clinical rotation (radiology, medicine, nursing, operating room/anesthesia, ICU, etc.).For each on-campus clinical rotation, the required tasks that a student must perform and any on-the-clinic-floor instruction administered during the rotation were identified. The on-the-floor instruction was analyzed and converted over into a Web-based system using the teaching engine model described above. Examples of "didactic" content identified might be the reasons to place a cephalic catheter, the method by which you select the proper radiographic position for an animal, the method by which blood is collected from the jugular vein, etc. In other words, the "dry lab" part of the clinical instruction was identified and put into the Web-based teaching engine course.

What was left were the motor skills (e.g., placing the cephalic catheter, positioning the animal for an X-ray, or collecting blood from the jugular vein).For *each* of the 200+ AVMA Essential Tasks (motor skills), and the additional ones required by the Purdue on-campus program, a detailed analysis was done to identify:

1. Goal of this motor skill
    Successfully administer medication by intravenous cephalic injection such that the medication is correctly administered without injury to either the patient or veterinary personnel
2. Description of the motor skill
    The student will administer either a prescribed medication or saline placebo into the cephalic vein
3. Criteria
    The student selected the proper site for administration
    The student properly introduced the needle into the site of administration
    The student aspirated the syringe to check for blood prior to injection
    The student injected the drug without signs of extravasation
    The student properly applied pressure to the puncture site to reduce bleeding
4. Number of times the task needs to be performed: *5*

These tasks were to be performed at a *Clinical Mentorship* site, which would be a veterinary hospital of the student's choosing. In most cases the student is already an employee of the veterinary hospital. However, because some tasks must be performed in all major domestic species (equine, cattle, dog, cat) and laboratory/pocket pets, the student may be required to gain experience at more than one veterinary facility.

The role of the clinical mentor (a veterinarian or a registered/certified/licensed veterinary technician) would be to monitor the performance of the student, make an assessment on one performance using an evaluation form created for each task, and sign off that the student met the criteria stated for the task performance.

In addition to the mentor's signature, we are also required to have photographic, video, or sample submission showing the student performing the task. Therefore, each task has listed:

5. Materials Submitted for Evaluation and Verification:
    A. A signed form for each Cephalic IV Injection Administration Evaluation
    B. A video tape showing the student lining up and introducing the needle into the vein, pulling back on the syringe to check for blood, and administering the medication to the dog. The tape should clearly show the student, the position of the needle/syringe, the introduction of the needle, the backflow of blood, the push of medication into the vein, and the area around the vein after needle withdrawal showing no signs of extravasation.

All paper materials are contained in a Clinical Mentorship Criteria Handbook and Log Book which is submitted, along with photographic or video documentation, to Purdue University for evaluation by the Clinical Mentorship Coordinator and/or the Purdue instructor of record for that clinical mentorship. Once all materials are validated, university credit is assigned.

Summary Status

The VT-DLP began Spring 1999.There are 18 Clinical Mentorships and 35 Web-based courses planned for the Purdue VT-DLP. As of Fall 2000, 15 of the Web-based courses will be on-line and one Clinical Mentorship. Anticipated completion of entire curriculum is Spring 2003.76 students were enrolled in Spring 2000 classes. The VT-DLP was granted the permission to offer an Associate of Science Degree in April 2000. AVMA accreditation process will be initiated pending completion of 3/4ths of the curriculum.

Biographical Sketch

Dr. Robert (Pete) Bill is Director of the Veterinary Technology Distance Learning Program and Associate Professor of Veterinary Clinical Pharmacology at Purdue University School of Veterinary Medicine. He received his Doctor of Veterinary Medicine from Purdue University in 1980, was in small animal practice until 1985, received his MS in Biology in 1985, returned to Purdue University and received a joint PhD in education and veterinary pharmacology in 1990. He is the immediate past president of the Association of Veterinary Technician Educators and currently serves on the AVMA's Committee on Veterinary Technician Education & Activities.

Address: 1240 Lynn Hall, Purdue University
West Lafayette, IN47907
E-mail: bill@vet.purdue.edu
URL: www.vet.purdue.edu/vtdl(lower case "VTDL")
Phone: (765) 494-8636
FAX: (765) 496-2873

Aviation Skills Training in the Army National Guard

Lt. Col. Craig Bond
Chief, Distributed Learning Branch
National Guard Bureau, Army Training Division

Joseph Pugh
Senior Analyst
Richard S. Carson & Associates, Inc.

National Guard Roles and Missions

The Army National Guard (ARNG) has a unique Federal-State status wherein it fully supports the National Command Authority and the global needs of the Active Army. In addition to support for Army missions, the ARNG has primary responsibility for the continental defense of the United States. In its Federal role, the ARNG is currently serving around the world, including Operation Joint Venture in Bosnia. The ARNG constitutes 55% of the total Army's combat maneuver, 46% of its combat support, and 25% of its combat service support forces. The ARNG serves as a State military force when not federalized by the President. In its State role, the ARNG can be mobilized to support civil authorities in response to natural disasters, civil disturbances and other emergency situations. While active Army units are based primarily at large military installations, ARNG units are geographically dispersed throughout 3300 communities.

The Distributed Learning System

The enabling technology for ARNG Distributed Learning (DL) initiatives is provided by the National Guard Distributive Training Technology Project (DTTP). This Congressionally mandated program will enable the ARNG to conduct cost-effective training for soldiers and units via DL media and methods. The DTTP is currently installing DL classrooms in all 50 States, the District of Columbia, Puerto Rico, The Virgin Islands and Guam, making it one of the first truly national DL networks. Approximately 400 classrooms will be in place by 2003.

Aviation Training Challenges

Air Traffic Control

The ARNG has almost half of the Army's Air Traffic Services (ATS) units. One 1 ATS Group Headquarters, 2 ATS Battalions and 13 ATS Companies are positioned among 14 States. Army National Guard ATS units are being used extensively to support ongoing contingency operations in Bosnia, Kosovo, and Kuwait. Theses units have supported the Bosnia and Kuwait missions for almost three years. Two-thirds of the personnel in these units are in Military Occupational Specialty (MOS) 93C, Air Traffic Controller (ATC). This specialty is the critical factor in the units' abilities to accomplish their missions. As of January 2000, only 62% of all assigned ATCs in the ARNG were qualified in their specialty. (The percentage does not take personnel shortages into consideration and is even lower when compared to the authorized staffing level for ATCs.)

The proponent for aviation training, the U.S. Army Aviation Center (USAAVNC) at Fort Rucker, AL does not have the capacity to provide instruction for all of the unqualified soldiers. Even if the capacity did exist, the ARNG—as a part-time force—does not have soldiers who can attend the 14-week resident course due to combinations of civilian employment considerations. (The course was lengthened from 11 to 14 weeks in June 1998 to reduce the recycle/failure rate.) Some ARNG soldiers leave ATC assignments due to difficulties in obtaining qualification. Recruiting personnel to remedy the shortfall is stymied by the lack of training opportunities. To solve this critical readiness issue, additional training opportunities employing innovative methods must be made available.

The ARNG conducted an 11-month DL ATC course in conjunction with USAAVNC in 1996 and 1997. Thirty-six students began the DL phase conducted via audio-graphics by an ARNG instructor temporarily assigned to the USAAVNC (no USAAVNC instructors participated in the DL phase). Fourteen of these students went on to the 10-day resident phase conducted at USAAVNC. (Six students attended the March 2-15, 1997 session and eight students attended the March 9-22, 1997 session.) Only one student graduated after being extended for two weeks and attending a 9-day resident radar lab. Another soldier was awarded the ATC certification after passing the Army Physical Fitness Test at her home armory sometime after course completion. Four soldiers were offered additional training, but they could not remain at Fort Rucker due to civilian employment constraints. In all likelihood, the four soldiers would have been certified had they completed the additional training.

In this first attempt at DL ATC training, we found that instructional time was reduced; the training schedule was rearranged, there were fewer contact hours for guided study and instructor conferences, and the instructors for the DL group had significantly less experience than resident instructors. There was some indication that tasks required for successful completion of the two final evaluations administered at Fort Rucker were not taught in the DL phase as was originally anticipated. General lessons learned from this experience are:

- The appropriate DL technology, simulations and courseware must be used to successfully teach unique skills. Tasks and skills require different techniques to accomplish training transfer.
- The sequence of task training and the amount of time required to train a task must be carefully analyzed and presented to ensure the success of DL. In the DL ATC effort, the sequencing of training was significantly different than the residence course.
- In the resident course, students had the opportunity for additional training at the Aviation Learning Center during the evening hours. The Learning Center had study materials available and an instructor present to answer questions.
- A training program that trains a "real time" or "hands-on" based skill must include a means for the student to practice the skill in increasingly more difficult scenarios on the actual equipment that the student will be using, or a simulator which replicates that equipment.
- DL is not suited for every type of training. The criteria for the selection of students to participate in DL training and the time spanned from beginning to end of training can significantly impact the success of the program.

- An assistant instructor located at the remote site, certified in the specialty being trained, qualified in DL methods, and certified by the proponent school is critical to the success of this type of delivery.
- Any good production needs a director to ensure all the pieces are present at the right time and that all elements are functioning properly. That producer must be centrally located and should be monitoring all elements at the same time. The DL Director probably is not located where the instruction is delivered from and not where the students are. In VTT for example, the DL Director should be at the "bridge" or hub location where he can facilitate this control and provide quality control of the instruction and student participation. Today's students will not stand for poor delivery of training. They will find other things to do.

Helicopter Maintenance

Similar time constraints—and resulting retention and quality-of-life issues—confront ARNG soldiers assigned as UH-60 (Blackhawk) Helicopter Repairers. Most cannot afford to attend to the 7-week UH-60 Helicopter Repairer Transition Course resident course either at the U.S. Army Aviation Logistics School (USAALS) at Fort Eustis, VA, or the Eastern ARNG Aviation Training Site (EAATS). Thus the Eastern ARNG Aviation Training Site (EAATS) at Fort Indiantown Gap, PA was called on to develop a DL course to take the training to the soldiers in their states.

The preparation phase for the pilot course began with identification of states and units that were prepared to participate. Among many prerequisites, one was that the state had to have already installed a DL classroom at or near the Aviation unit location. Once a tentative list of sites was prepared, site surveys were conducted to determine the best sites. Once sites were selected, a memorandum of understanding was executed with each state. To ensure standardization of instruction, assistant instructors for each remote site were identified and given train-the-trainer instruction at the EAATS. The staff at the EAATS then developed video teletraining procedures and a schedule of instruction that configured the course content and sequence of events for delivery via DL during weekend training sessions.

The DL course consists of six weekend training sessions attended at the soldiers' home armories and two 2-week Annual Training (AT) phases conducted in residence at the selected remote sites. The sequence is three weekend sessions; a 2-week AT phase; three more weekend sessions; and a final 2-week AT phase. (Experience from the first iteration of the course showed that classroom instruction should be conducted during the weekend sessions while hands-on training should only be done during the 2-week sessions while the EAATS primary instructor is on site.)

The first class graduated four soldiers from the Iowa ARNG, four from Kansas and five from Ohio. The current class has eight soldiers from the Texas ARNG and twelve from California. Of the latter, six are attending training at Los Alamitos, in southern California and six in Sacramento, in northern California. The 2-week AT portions of training take place in Los Alamitos, California.

This program of instruction yielded several lessons about DL implementation:

- Thus far, costs for DL are higher than for resident instruction. One reason is that the initial investment is higher while economies of scale are still in the future. The other side of the coin is that the DL course trains more soldiers and thus "buys" a higher level of military readiness.
- In breaking new ground, there is a steep learning curve for instructors, staff and learners in both delivery methods and mastery of computer and video technology. This type of instruction requires trial and error before any substantial improvements can be made.
- In converting course materials for DL, instructors and developers face very different challenges when converting courses with a large amount of hands-on tasks than they face with classroom-taught instruction.
- The planning, integration and implementation of support and administration functions are as formidable as the development of instructional materials.

Summary

Even as these programs are being implemented and continuously improved, the ARNG aviation training establishment continues to leverage the emerging DL capability. The EAATS is working on courses for Instructor Pilot Standardization and Flight Operations Specialists. The Western ARNG Aviation Training Site at Marana, Arizona is developing an Aeroscout Reconnaissance course.

Biographical Sketches

Lieutenant Colonel Craig Bond is assigned as the Distributed Learning Team Chief, Army Training Division, National Guard Bureau. He is tasked with improving readiness by implementing training components of the National Guard Distributed Learning Program. Prior to this assignment, Lieutenant Colonel Bond served as an Army National Guard liaison at the U.S. Army Training and Doctrine Command. His aviation assignments include assault helicopter pilot in Vietnam; unit trainer, instructor pilot and platoon leader in the Maryland Army National Guard; standardization instructor pilot, Fort Rucker, Alabama; and aviation safety officer at the National Guard Bureau. Lieutenant Colonel Bond holds a bachelor's degree in English Literature and a master's degree in Administration. He is currently completing post-graduate work in distance learning.

Address: Army National Guard Readiness Center
ATTN: NGB-ART-D
111 S. George Mason Drive
Arlington, VA 22204
E-mail: bondc@ngb-arng.ngb.army.mil
URL: http://www-ngb5.ngb.army.mil/tng/arngdl.htm
Phone: (703) 607-7307
Fax: (703) 607-7383

Joseph Pugh is a Senior Analyst with Richard S. Carson & Associates, Inc. where he works as the training and education liaison on the National Guard Distributive Training Technology Project support team. A retired Army Lieutenant Colonel, he served as the National Guard Bureau project officer for Distance Learning and as the project manager for the re-engineering of the Army National Guard Training and Education System. Previous assignments include the Army National Guard liaison at the US Army Air Defense Artillery School, an Assistant Professor of Military Science at Drexel University and as an Evaluation Team Chief with the US Army Southern European Task Force. Mr. Pugh holds a B.S. in Political Science from Drexel University, an M.A. in Management from Webster University and an MBA from Averett College. He is currently enrolled in the Organization and Management Ph.D. program at Capella University.

Address: 4330 East West Highway
Suite 304
Bethesda, MD 20814
E-mail: pugh@carsoninc.com
URL: http://www.carsoninc.com
Phone: (301) 656-4565
Fax: (301) 656-4806

Adapting e-learning Tools
From Educational to Training Environments

Curtis J. Bonk, Associate Professor
Indiana University
Bloomington, Indiana

Robert A. Wisher, Senior Research Psychologist
U.S. Army Research Institute
Alexandria, Virginia

Introduction

Networked communications are fostering new and creative approaches to learning. Notably, the Internet is advancing the creation of Web-based collaborative learning environments and engaging e-learning tools. Collaborative environments, which support learners in achieving a common learning goal, have been successfully established in educational settings from K-12 to higher education (Bonk & King, 1998). Within the military, collaborative environments have been applied for training team skills in networked simulations. There has, however, been little systematic research in applying Web-based collaborations or the new genre of e-learning tools to training individual military skills.

For reasons of cost and accessibility, the Army has a growing need for training delivery on an "anywhere at anytime" basis through distributed training technologies. Also, training is to move from the classroom-centric delivery of instruction to the learner-centric model, in which soldiers assume increased responsibility for learning procedures and complex skills and for developing teamwork abilities. The present day research on learning from Web-based instruction, however, has been oriented primarily towards educational rather than training settings. A central issue is whether the beneficial application of Web-based approaches to learning reported in the educational literature can be adapted to the Army's changing training delivery strategy. Caution should be taken when assuming that what works well in education will necessarily work as well in training.

Education Versus Military Training

Education and training share the psychological constructs of learning and memory, but there are fundamental differences in the goals, outcomes, and eventual application of the underlying instruction. In education, which has historically been concerned with the social and intellectual development of the whole person, there is no upper limit to how elevated a learning outcome should be. In an educational program, the range of a learning outcome is generally open-ended. The thought of producing a student who is "over educated" is inconceivable to an educational provider. In contrast, the thought of a student being over trained can be costly, in terms of time and money, to a training provider. It is better to have the prepared student productive on the job rather than remain in class.

Although a new instructional practice might succeed in an educational setting, there is no guarantee of its success in a military training environment. Differences in terms of learning cultures, social interactions, and motivational and affective factors can influence the transfer potential between environments (Seidel & Chatelier, 1994). Military training is concerned with increasing the capacity to perform military functions and tasks. Learning outcomes are established by doctrine and the criteria for acceptable proficiency are generally fixed. The fundamental distinction between education and training, the former focused on the open acquisition of knowledge and the latter focused on improving job performance, must also be considered. Whether the benefits of innovative approaches to education also benefit training can be determined through research that adapts and evaluates the new collaborative and e-learning tools in Army settings.

The adaptation framework presented here is based on an extensive examination of the literature on e-learning technologies and collaborative tools in the educational arena. The review was in depth and focused on recent advances – of the over 240 studies examined, nearly 80 percent were published between 1996 and 2000. Based on this analysis, ten primary experiments are recommended to serve as a research framework for adapting and tailoring the e-learning technologies to Army training needs. Due to space limitations, only five topical areas will be covered. The complete analysis will be available in Bonk and Wisher (2000). The key topical areas covered here are student-centered approaches, learning-team centered approaches, instructor moderation, collaborative learning environments, and research methods for online collaboration.

The Emergence of e-learning Technologies

As we enter the 21st century, innovative learning tools for education and training continue to evolve and expand. Virtual communities, distributed simulations, virtual realities, online visualization tools, intelligent agents, and technology for displaying complex webs of knowledge have all reconceptualized distance learning environments during the past decade (Dede, 1996). The proliferation of Web courseware technologies and collaborative tools multiply the opportunities and challenges facing higher education as well as training environments (Gray, 1999). In both education and training, learning is seen as more socially shared, active, and interactive than in the past. In fact, Dede (1996, p. 29) argues that "education must help all students become adept at distance interaction because skills involving information-gathering from remote sources and collaborating with dispersed team members are as central to the future workplace as learning to perform structured tasks quickly was to the industrial revolution."

Student-Centered Approaches

Many educational technologists are advocating the need to shift from instructor-centered to student-centered approaches (e.g., Hannafin & Land, 1997). Learner-centered pedagogy asks what students need to learn, what their learning preferences are, and what is meaningful to them. Web-based instruction provides opportunities for learning materials, tasks, and activities to fit individual learning styles and preferences. Networks of learning information, such as digital libraries, are available to peak student interests and ideas. Such environments also provide access to more authentic learning communities than typically found in conventional educational environments. In accordance with the learner-centered movement, online tools should provide opportunities to construct knowledge, actively share and seek information, generate a diverse array of ideas, appreciate multiple perspectives, take ownership in the learning process, engage in social interaction and dialogue, develop multiple modes of representation, and become more self-aware (Bonk & King, 1998).

Learning-Team Centered Approaches

In terms of training environments, both IBM and others have published white papers that address the need to extend learner-centered approaches to "learning team centered" approaches (Kulp, 1999). According to these reports, not only do e-learning environments offer opportunities for actively interpreting, questioning, challenging, testing, and discussing ideas, but they provide a means to collaboratively create and share new knowledge. The role of the instructor in such an environment is to facilitate student information generation and sharing, not to control the delivery and pace of it.

Instructor Moderation

In many ways, e-learning is an entirely new type of education requiring a redesign of instructor roles, responsibilities, and commitments (Besser & Bonn, 1997) as well as timely support and training for those agreeing to teach online. The potential instructional roles might seem daunting. As student-centered activities are increasingly facilitated by emerging technology, the role of the faculty member or instructor shifts to facilitator, coach, or mentor who provides leadership and wisdom in guiding student learning. Instructors have a number of roles that they can assume online such as chair, host, lecturer, tutor, facilitator, mediator, mentor, provocateur, observer, participant, co-learner, assistant, and community organizer. Of course, until instructors feel comfortable and gain experience in this new role, online courses may experience higher than expected drop out rates (Carr, 2000).

Collaborative Learning Environments

Collaborative learning has the potential to foster the interaction and social support traditionally lacking in distance learning environments. There has been a wave of research and design taking place in the field of computer supported Collaborative Learning (CL) and computer supported Collaborative Work (CW). As a field, CW employs groupware tools and group decision support systems to increase the effectiveness of teams by facilitating, augmenting, and redefining their communication and interaction activities (Wang & Bonk, 2000). Groupware supports groups of people to complete a common task or perform a common goal despite time and space separation and variations in team size.

CL is the younger sibling of CW and is more focused on how collaborative environments enhance student learning and teamwork in academic tasks. The field extends research and development on using technology as a tool that augments and enhances learning, to thinking about how it also can be used for student collaboration, learning related interaction, and knowledge building. CL tools might support the communication and linking of ideas, the structuring of group dialogue, the tracking of decisions, the visualization and representation of ideas, online mentoring and feedback, the generation and evaluation of ideas, and the collection and analysis of data. Scholars in these fields want to help people learn or work in teams using technology. Both fields are interested in how to electronically share goals and creations, the formation of mutual understandings, and the tools, tasks, and group sizes that foster online social interaction and collaboration. In both environments, the sharing and distributing of information is valued and nurtured.

Research Methods for Online Collaboration

Owston (1997) asks three basic questions in terms of Web-based instruction: (a) Does it increase learning access?; (b) Can it improve learning?; (c) Can increased access and improved learning be attained without additional costs? Unfortunately, answers to Owston's questions are not readily available. In fact, most research on whether the Web improves student academic performance is strictly anecdotal or attitudinal (Usip & Bee, 1998;) or finds no significant differences. Too few educators are asking critical questions about e-learning and, instead, rely on such anecdotal evidence or nothing at all (Windschitl, 1998).

Questions need to be raised in both education and training environments about the processes that occur during online searching, the types of guidance needed, how online learners reach common ground, and the role of the instructor in online collaboration. Is there evidence that students and instructors benefit from e-learning? Do these tools improve teaching and learning? Do different types of learners or learning strategies foster greater achievement (Kerka, 1998)? How do e-learning training environments such as in the military and corporate sector differ from or confirm results found in higher education?

Research Gaps

As is indicated above, there is a pressing need for more research on e-learning environments (University of Illinois, 1999). A combination of qualitative and quantitative research, however, may help understand the mixed results that are far too common in comparative studies of distance learning (Scrifres et al., 1998) while identifying areas of impact, instead of providing yet another study with no significant differences. There is a recent shift from focusing on how individuals function in different types of groups and within different activities, to targeting the group itself as the unit of analysis (Bonk & King, 1998). What types of interactions, explorations, negotiations, and explanations within the group impact individual and group performance? Key questions remain related to how students construct and negotiate meaning in online collaborative environments as well as the role of the instructor in such environments.

Instead of posing more questions to the field as seems typical in the literature, the military is interested in conducting experiments that can shed light on the effectiveness of e-learning tools. As such, a series of experiments designed to address these concerns is provided below. Ten primary experiments are listed. Only the first experiment will be described in more detail. Descriptions of the other nine, as well as descriptions of over a dozen secondary experiments, can be found in Bonk and Wisher (2000).

Experiment I.	Variations in Instructor Moderation: E-learning environments
Experiment II.	Online Debating: Online officer training program
Experiment III.	Student Perceptions of e-Learning Environment: Predictors of learning
Experiment IV.	The Development of Online Learning Communities
Experiment V.	Time Logging: Effect of e-learning approach on time
Experiment VI.	Critical Thinking and Problem Solving Applications in Synchronous and Asynchronous Environments
Experiment VII.	Peer Tutoring and Online Mentoring: Impact of peer tutoring on e-learning achievement
Experiment VIII.	Student Retention: E-learning and attrition
Experiment IX.	Conceptual Referencing: Collaboration and explicit referencing
Experiment X.	Online Collaboration: Group performance and collaborative learning technologies.

Each experiment can likely be conducted in a military distance learning program. Depending on the specifics of the program and e-learning tool under investigation, the variables might be extended or modified. Much of the research evidence for the training effectiveness of distance learning has been criticized as being anecdotal, poorly controlled, and not supported by an adequate experimental design (Wisher & Champagne, 2000). Such practice leaves too much room for potential threats to the internal validity of the study. The experiments described below are those that can guide the Army in adapting promising e-learning technologies from educational settings to training environments.

First Experiment. Variations in Instructor Moderation: e-learning environments.

The instructor has a key role in online training environments. Instructors assume many roles in e-learning environments. Research to date indicates that they need to shift from traditional lecture-based approaches to being facilitators of learning. But how do instructors foster student social interaction and knowledge construction online? How can instructors raise the level of online questioning and interaction? How can instructors help move learners from being information receptors to actively interpret, question, challenge, create, discuss, and negotiate ideas? What types of online supports are needed to move learners from simply assimilating archived knowledge to places wherein students personally construct their own personal and group knowledge? Instructors in five classes will be provided with materials on different types of online teaching approaches: (a) instructor as guide; (b) instructor as host or friend; (c) instructor as provocateur; (d) instructor as teacher or knowledge provider; and (e) a combination approach. Online transcripts will be coded to determine the type of instructional style employed online and then compared to the training. Just what forms of instructional scaffolding and support do instructors with each style tend to use? Techniques to facilitate student collaboration will be emphasized.

Initial experiment: Instructional approach preferences.

Independent Variables: Online teaching approaches	Dependent variables: Student preferences and learning outcomes
15. Teacher as guide 16. Teacher as host, or friend 17. Teacher as provocateur 18. Teacher as instructor 19. Combination	◆ Preference for e-learning ◆ Sense of learner-centeredness ◆ Learning outcome

Follow up survey: Determine best approach for e-learning.

- Present 20-30 teaching metaphors (i.e., teacher as a coach, expedition leader, etc.).
- Have instructors select the metaphors that best describe their online teaching approach.
- Look for differences in the role of the instructor for complex and simple courses.

The experiment described above is one illustration of the research needed to assess the impact of an e-learning tool originally developed for education. Results from such experiments are intended to shed light on the e-learning outcomes in military training environments, while adding to those already conducted in higher education settings. As we look to the future, it is clear that e-learning pedagogy and research is just beginning to be defined and understood. Perhaps the important similarities between training and education settings will emerge.

References

Besser, H., & Bonn, M. (1997). Interactive distance-independent education. *Journal of Education for Library and Information Science*, *38*(1), 35-43.

Bonk, C. J., & King, K. S. (Eds.). (1998). *Electronic collaborators: Learner-centered technologies for literacy, apprenticeship, and discourse*. Mahwah, NJ: Erlbaum.

Bonk, C. J., & Wisher, R.A. (2000). *Applying collaborative and e-learning tools to military distance learning: A research framework*. (U.S. Army Research Technical Report, in final review). Alexandria, VA: U.S. Army Research Institute for the Behavioral Sciences.

Carr, S. (2000, February 11th). As distance education comes of age, the challenge is keeping the students. *The Chronicle of Higher Education*, pp. 1-8, Washington, DC. http://chronicle.com/free/v46/i23/23a00101.htm

Dede, C. (1996). Distance learning, Distributed learning: Making the transformation. *Learning and Leading with Technology*, *23*(7), 25-30.

Gray, S. (1999). Collaboration Tools. *Syllabus*, *12*(5), 48-52.

Hannafin, M. J., & Land, S. M. (1997). The foundations and assumptions of technology-enhanced student-centered learning environment. *Instructional Science*, *25*, 167-202.

Kulp, R. (1999). *Effective collaboration in corporate distributed learning: Ten best practices for curriculum owners, developers and instructors*. Chicago: IBM Learning Services.

Owston, R. D. (1997). The World Wide Web: A technology to enhance teaching and learning? *Educational Researcher, 26*(2), 27-33.

Scifres, E. L., Gundersen, D. E., & Behara, R. S. (1998). An empirical investigation of electronic groups in the classroom. *Journal of Education for Business*, 237-250.

Seidel, R. J., & Chatelier, P. R. (1994). *Learning without boundaries: Technology to support distance/distributed learning*. New York: Plenum Press.

University of Illinois (1999) *Teaching at an Internet Distance: The pedagogy of online teaching and learning*. University of Illinois Faculty Seminar, Urbana-Champaign, IL: The University of Illinois. Available: http://www.vpaa.uillinois.edu/tid/report/

Usip E. E, & Bee, R. H. (1998). Economics: A discriminant analysis of students' perceptions of Web-based learning. *Social Science Computer Review, 16*(1) 16-29.

Wang, F., & Bonk, C. J. (2000). *Designing groupware-based learning environments using cognitive apprenticeship*. Manuscript submitted for review.

Windschitl, M. (1998). The WWW and classroom research: What path should we take? *Educational Researcher, 22*(1), 28-33.

Wisher, R. A., & Champagne, M. V. (2000). Distance learning and training. In S. Tobias & J. D. Fletcher (Eds.), *Training and retraining: A handbook for business, industry, government, and the military*. New York: Macmillan Reference USA.

Biographical Sketches

Dr. Curtis J. Bonk is a former CPA and corporate controller who received his master's and Ph.D. degrees from the University of Wisconsin. Curt Bonk is now an associate professor in the Departments of Counseling and Educational Psychology as well as Instructional Systems Technology at Indiana University. He also is a core member of the Center for Research on Learning and Technology. He received the Burton Gorman teaching award in 1999 and the Wilbert Hites Mentoring Award in 2000. He has recently been a visiting scholar in Finland, Canada, and Australia. Curt is currently a Senior Consortium Research Fellow with the Army Research Institute. He recently edited "Electronic Collaborators: Learner-Centered Technologies for Literacy, Apprenticeship, and Discourse" published in 1998 by Erlbaum as well as the first online course reader for educational psychology published by Bell and Howell. He is President of CourseShare.com, which he founded in 1999.

Address: Indiana University
School of Education: Room 4022

Dept. of Counseling and Educational Psychology
Bloomington, IN 47405-1006
E-mail: CJBonk@indiana.edu
URL: http://php.indiana.edu/~cjbonk and http://CourseShare.com
Phone: (812) 856-8353
Fax: (812) 856-8333

Dr. Robert A. Wisher is a Senior Research Psychologist with the U.S. Army Research Institute in Alexandria, Virginia. He is responsible for research on the use of distributed training technologies for use by soldiers in distance learning and "on demand." He received the 1999 U.S. Distance Learning Association Outstanding Achievement Award by an individual in government for his research and evaluation work. He holds a Ph.D. in Experimental Psychology from the University of California, San Diego.

Address: Army Research Institute
5001 Eisenhower Avenue
Alexandria, VA 22333-5600
E-mail: wisher@ari.army.mil
Phone: (703) 617-5540
Fax: (703) 617-3573

University of Wisconsin Pilot Dairy Distance Education:
The School for Beginning Dairy Farmers

Arlin Brannstrom, Faculty Associate
UW Center for Dairy Profitability

Dr. Dick Cates, Coordinator
UW School for Beginning Dairy Farmers

The Wisconsin dairy industry is undergoing tremendous structural change. While total cow numbers in the state are holding relatively steady, the number of farms has declined from 26,000 in 1990 to less than 20,000 in 2000. Traditional entry / exit paths of partnership and purchase of exiting family farms are not options for many non-traditional dairy students. The School for Beginning Dairy Farmers (SBDF) is designed to help non-traditional new entrants into production agriculture. Established in 1995, it enables young people to network with and learn from both University faculty and successful producers who have recently gone through the process of beginning to farm.

During the early years the SBDF was conducted exclusively as an on-campus seminar held in conjunction with the College of Agricultural and Life Sciences Short Course program. Students interested in the SBDF were required to attend short course classes and participate in internships.

We recognized that not all members of our potential audience were able to take the time off and endure the expense of living on campus or traveling to campus every week. During the 1998/99 school year we conducted the course over weekly telephone conference calls to eight off-campus participants. Although the student reviews of the course were generally positive, the teleconference participants longed for more visual stimulation and the on-campus students complained about the slamming doors and barking dogs that could be heard in the background at times (from the remote sites).

During the 1999/2000 school year and with the considerable help from the Wisconsin Milk Marketing Board, the Department of Academic Affairs, the Center for Integrated Agricultural Systems, the Center for Dairy Profitability and the Integrated Pest Management Program, the School for Beginning Dairy Farmers was chosen to pilot a streaming audio course over the Internet. The pilot was limited to 16 sites, although expressions of interest were received from more than 75 people.

All participates were required to pay a $200 site fee and asked to have access to at least a 56Kb dialup Internet Service Provider and a Pentium class computer with a Netscape or IE 4.0 or later web browser. Pilot clusters were located throughout Wisconsin and in New England, California and Washington State.

The Team

Conducting a course both to a live student audience and to an equally large audience of distance learners was something that required a delegation of duties and a real team effort. Our team consisted of three people. Dick Cates was responsible for the weekly course content and speaker selection, George Rice was assigned the task of selecting and operating the software and audio equipment used to capture the audio steams to the web, and Arlin Brannstrom administered the project and conducted demonstrations of the course to other interested campus stakeholders.

We established a website and posted project status reports weekly for our funding partners and others interested in the project.

Preparation

The SBDF classes are conducted weekly from November 10th through March 23rd. Traditional on-campus short course students assembled in a conference room which was equipped with a video projector and 10 megabit Ethernet wiring. A mobile cart was constructed and used to carry in the audio and computer hardware used during the class.

During the Summer and early fall of 1999 it became apparent that both instructors and distance learning site facilitators would benefit from an orientation session prior to the first "official" day of class.

To orient the instructors and facilitators we offered two optional workshops to review the project goals, demonstrated the instructional software which was going to be used and provided some time to address individual hardware and software concerns.

Detailed instructions and a CD containing the latest versions of the suggested browsers were prepared and distributed to all the distance education sites in early October.

A special session was added to the agenda on November 3rd for only the remote course sites. During that session a teleconference number was reserved for the remote sites to call if they were experiencing difficulties and the course site was open for testing. No formal instruction was conducted – but the conversations in the room were used to set audio levels and gain familiarity with the software prior to the first day of class.

Course Instructors

The 15 weeks of the SBDF was filled with two or three speakers during each two-hour session. No speaker was ever repeated and many of the farmer presenters had little or no experience in preparing outlines or PowerPoint slides for their presentations.

Equipment

We knew that for this pilot to be successful under these conditions, we needed to make the technology as transparent as possible. We chose to use two wireless headset microphones run through an audio mixer board (see appendix 1). The audio signal was further filtered through an audio compressor and finally sent into the line-in of our Dell Dimension sound card.

The remote students were instructed to boot their browsers and log into a web address associated with a Linux server in St Louis, Mo. The software for audio instruction is called VOICE from a company now known as NetBIAS. The NetBIAS website is: www.netbias.com. The VOICE website extends the campus paradigm to its web page. Students can go to faculty offices, the library and, of course, to courses they have registered for.

Delivery

After a few weeks of trial and error the streaming audio portion of the course settled down. Most sites scored the audio quality between a 7 and 8 on a scale from 1 to 10. Our remote sites were logging in from a variety of locations with different connection speeds and experiences. The most consistent results were achieved from a pilot group in Green Bay, which was connected in a vocational school classroom via a T1 connection. Other dialup sites did experience occasional voice delays due to Internet traffic congestion. These delays were more noticeable when we attempted to incorporate 30 second delayed video images of the speakers.

Originally, we planned to backstop the Internet stream with a reserved teleconference number, which could also be called if the Internet connections failed. As a third and final line of defense we setup a video camera in the back of the classroom to make an audio record of the classes. As we gained familiarity with the real audio tools available for processing video we started posting these streaming audio records on the web and found them to be very popular among the remote sites.

A complete collection of the course was assembled and burned as a two CD archive of the 1999/2000 lectures. Copies of the archives were made available to the students and facilitators of the pilot.

Assessment

The final week of the scheduled course was reserved for a dialup teleconference to discuss the project. Unfortunately several site facilitators and producers were unable to join the teleconference, but those who were able to participate were very positive. Weekly dialog was encouraged from all the remote sites, and the unedited comments and suggestions from the remote sites were posted for all to see at the project website. The feedback page can be viewed at: http://cdp.wisc.edu/ldte/Feedback/FB1.htm

Plans for the Future

The School for Beginning Dairy Farmers will be repeated again during the 2000/2001 school year. The obvious challenge for the institution will be to devise a fee structure that will support this type instruction in the absence of pilot grants.

We purposely limited our off-campus enrollment last year, knowing that we'd have our hands full just servicing a limited number of remote sites. Now that we're more confident in our abilities we, feel we could easily handle twice as many remote sites.

The SBDF was an ideal course for the our first endeavor in Internet streaming audio course work because it only met once per week but it included a live audience which made it easier for the instructors to see at least part of their audience. The Internet profoundly changes the way we can aggregate learners across great distances. Many other courses have the potential to be delivered in this way. Streaming Internet audio also has potential to be used as part of regular occurring smaller group discussion.

Conclusion

The SBDF pilot was one of the most interesting and rewarding projects we have worked on in our years at the University of Wisconsin. Streaming Internet instruction makes it possible to reach motivated audiences in ways that seemed highly unlikely only a few years ago. Rapidly improving connectivity and bandwidth improvements only make the future of Internet streaming courses more exciting. Recent announcements of enhanced versions of Real Audio and other streaming technologies make the future for distance education seem very bright. However, many other exciting technologies have failed to provide the anticipated educational dividends in the past. Our challenge as educators will be to identify and focus these emerging technologies to topics and audiences that are hungry for new more convenient and cost effective ways of learning.

Biographical Sketches

Arlin Brannstrom is a Faculty Associate at the University of Wisconsin–Madison Center for Dairy Profitability. Prior to joining the Center, Brannstrom was the Assistant Director of the North Center Computer Institute and a Faculty Associate with the UW Center for Cooperatives. He holds an MS in Agricultural Economics and an MBA in Finance from the UW.

E-mail: brannstrom@aae.wisc.edu
URL: cdp.wisc.edu/ldte
Phone: (608) 265-3030
Fax: (608) 262-9017

Dr. Richard Cates is the Coordinator of the School for Beginning Dairy Farmers and a practicing beef rotational grazier near Spring Green, Wisconsin. Cates holds a Ph.D. in Agronomy from the UW and has spent several years in Saudi Arabia as a forage crop consultant to the World's largest dairy farm.

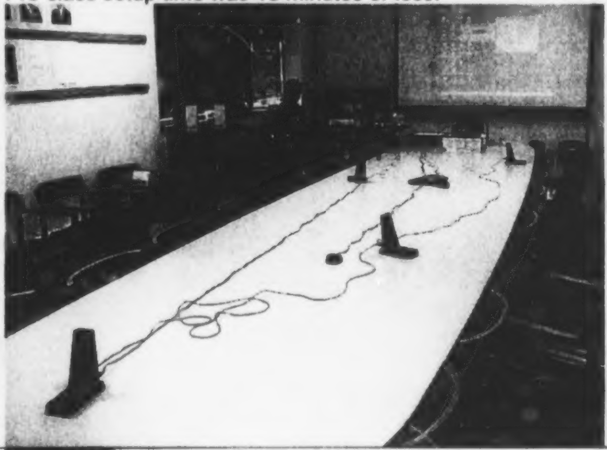
E-mail: rcates@facstaff.wisc.edu
URL: cdp.wisc.edu/ldte
Phone: (608) 588-2836
Fax: (608) 265-3020

Appendix 1. Pilot Classroom:

Computer & Audio Equipment placed on a "mobile" workstation.

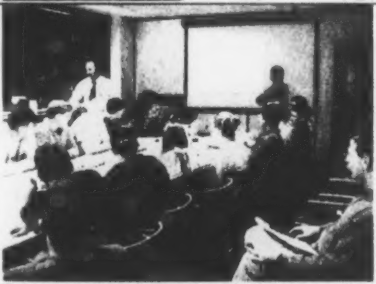
Audio equipment included a mixer (left) and compressor (right).

Pre-class setup time was 15 minutes or less.



Campus students and instructors were seated around a conference table.

Wireless headset microphones allowed speakers to move freely about the classroom.



Both local and remote students could see speaker's PowerPoints.

Videoconferencing in the Nation's 5th Largest Public School System

MaryAnn Butler-Pearson, Ed.D.
Distance Learning Coordinator
Broward County Public Schools

Broward County, Florida uses the videoconferencing medium to bring academic classes and programs, field trips and special events to thousands of students in its elementary, middle and high schools as well as adult education centers and centers for children with special needs. Videoconferencing was introduced in Broward County in 1997, as just one method of providing equitable educational opportunities to students in this geographically large, culturally and economically diverse school system. Teachers and administrators have also benefited form this format through staff development opportunities and informational meetings. The videoconferenced programs have become so popular that the district has purchased a videobridge for multipoint conferences.

BECON, the district's educational communication network, is the hub for the videoconferencing initiative. All 25 high schools, 6 middle schools, 8 elementary schools and 6 adult and special centers, as well as several district offices are equipped with group videoconferencing units that communicate at 384kbps. The videoconferencing initiative is called DIMENSIONS because of the many current and future facets involved in distance learning.

Academics

Academics in the elementary and middle schools consists of weekly interactive programs that assist the classroom teachers through motivating the students and demonstrating model lessons for the teachers. *Reading Rascals* is designed to increase interest in reading through books about the many cultures that influence the American society and the use of guest readers who highlight their careers and invite the children to ask questions about the work that they do. *Windows on the World* brings natives from many countries and cultures to visit with children in all grades. Students have the opportunity to ask questions about the country represented and learn first hand about its culture. *Writing With a Florida Flair* teaches students the correct format for writing narratives similar to those that will be assessed on the state's competency exams. Another program that works with teachers and students in their preparation for the standardized tests is *Math With Mr. G.* Geometry is introduced to children in the 5th grade and math skills are reviewed to promote higher success rates on the state exams. Science is made fun with *Science Explorers*. Students and their teachers explore the Earth and beyond. These programs have become so popular, that to maintain the desired amount of interactivity, some are repeated each week so the number of participating schools can be limited to 5 or 6 for each program.

The scope of available courses in the high schools varies due to the nature and size of the student populations and the expertise and certifications of the teachers. In addition to providing classes for students who otherwise would be unable to take them, videoconferencing provides staff development opportunities for teachers. For example, when the facilitating teacher at a remote site is certified in the subject area but lacks the experience or confidence to teach at the Advanced

Placement (AP) level, he is able to mentor under a highly successful AP teacher at the instructional school. In this way, the district is building a cadre of teachers for these high level classes. To date, 16 courses for high school students have been taught to students in AP and dual enrollment classes as well as regular level classes. Review sessions for the national AP exams are designed and lead by some of the district's most successful AP teachers.

Field Trips

Students at all levels have been given the opportunity to travel to various parts of the United States, Europe and Asia. The SAXOphone Project (Students All Over the World Exchanging Over the Phone), an enterprise Broward County shares with Nova Southeastern University and New York's BOCES, has brought together students and teachers in Broward County with their counterparts in several other states, England, Sweden, Norway, Germany and Japan. These field trips take students to places like the Johnson Space Center in Houston, Texas, behind the scenes at the Broward Center For Performing Arts, the Mote Marine Science Institute in Sarasota, Florida, and the Urayasu Folk Museum in Chiba, Japan.

Special Events

Students at various schools have had the opportunity to participate in debates on hot topics such as violence in our schools and the death penalty. Among others, they have interviewed a producer/director in California, a survivor of the Holocaust, players for one of the professional sports teams in South Florida. One of the most exciting recent events was an informal concert given by a world-renowned Japanese Shakuhachi musician from his studio outside of Tokyo. A jazz musician of Japanese decent who lives in Florida played the vibraphone at the BECON facility. Each musician played separately and then, as musicians often do, they began to jam which thrilled the audience.

Unique Projects

Using grant funding, one of the vocational/technical centers in the district placed videoconferencing units in the homes of 6 people with physical handicaps too severe to permit them to take classes at school. These individuals connected to a microcomputer lab at the school and learned an office administration program along with students on-site. Each earned certification from the vocational/technical center that will help them find gainful employment they can do from home. A center for students with severe emotional problems was able to offer Spanish to its students through videoconferencing. More innovative uses for the technology are planned for the next school year.

Staff Development and Administrative Use

Curriculum department and principals' meetings, and other administrative activities conducted through videoconferencing have saved the district money and the participants precious time away form their offices and schools. Over 1,200 teachers new to the district participated in the required orientation program for new teachers. School to Career staff, teachers of the gifted, and area advisory councils are just some of the groups who have used the technology to meet interactively, in real time.

The future for videoconferencing in Broward County Schools is limitless! Pilot programs integrating it with other electronic media such as the Internet, microwave transmission, and regular broadcast television have been successful, paving the way to enhanced learning opportunities for the teachers and students in the community.

Update

Since the original publication of this article, the author has presented Broward County's initiatives to the University of Chiba, Japan, and school districts in New York, New Jersey and Texas

Reference

Butler-Pearson, M.A. (2000). Videoconferencing in the nation's 5th largest public school system . *Washington: Information Technology and Post-Secondary Education (ITPE), 3*(6), 6-7. (Original publication: © 1999 by Higher Education Washington, Inc. Permission granted for reprinting May 2000 from ITPE.)

Biographical Sketch

Dr. MaryAnn Butler-Pearson, a classroom teacher since 1969, brings many years of experience to her position as Coordinator of DIMENSIONS, the Distance Learning Department for Broward County Public Schools. Dr. Butler-Pearson has been recognized by the district as the 1993 Broward County Teacher of the Year, by the state of Florida as Geology Teacher of the Year, Charter Member and Advisory Board Chairperson for the Florida League of Teachers, two-time state winner of the Presidential Award for Excellence in Science Teaching and by the National Science Foundation as a Project ESTEEM grant winner for the Harvard University summer program. In 1999, she traveled to Japan as a Fulbright Memorial Fund Scholar. Her writings have been published in *ERIC*, the *Social Studies Journal*, *ITPE*, *VUGA* (website and newsletter) and *TeleConference* magazine, and she has been a presenter at national, state and local conferences. As Distance Learning Coordinator, Dr. Butler-Pearson has incorporated the use of videoconferencing, the Internet and cable television to bring education to students at home, at school, or wherever they have access to the appropriate communication mode.

Address: BECON
6600 SW Nova Drive
Ft. Lauderdale, FL 33437

E-mail: BECONDistLearn@aol.com
URL: http://www.becon-itv.org/dimensions
Phone: (954) 370-8364
Fax: (954) 370-1648

Online Faculty Workshops

Amy Campbell
Assistant Director, Office for Teaching and Learning
Wayne State University

Introduction

As more and more faculty at colleges and universities across the country are becoming interested in incorporating the Web into their teaching, or even in teaching fully online, the need for opportunities for faculty to learn about how to teach online becomes greater. For-profit companies offer online courses to train faculty to teach online, and universities active in Web-based distance education have also started this practice. Our faculty support office foresaw a need for such training at our institution, and took steps to design and develop a program to fit the needs of our faculty. This paper will begin with some background information about the status of technical training for faculty and online teaching at Wayne State, will describe the audience for and objectives of our online faculty courses/workshops, will describe our course/workshop design process (how we chose between different models of online instruction), and will describe the end result of the design process and the decisions we made to best tailor our workshop to current faculty needs.

Background

Our faculty support office (the Office for Teaching and Learning, or OTL) at Wayne State University has a two-fold mission: to provide faculty with both "traditional" instructional support and instructional technology support. As at many institutions, the primary requests of faculty at Wayne State for instructional technology support over the last one to two years have been for using the Web to enhance teaching. Instructors request help both with learning the tools for online teaching, and learning effective, pedagogically sound methods for applying those tools in their classes.

Prior to Summer 1999, most Wayne State faculty interested in having a Web site for their class were required to manually construct and maintain the site (or use a commercial service such as Blackboard.com). Those interested in providing more interactive features, such as discussion board or chat, document exchange, or online testing could use a non-educationally-oriented online conferencing product available on campus, or could find or write individual scripts to handle their required functions. Despite the technical difficulties involved in online (or even Web-supported) teaching, a significant number of faculty (over 100, that we were aware of) were interested in the possibilities.

In Summer 1999, our office was involved in piloting a number of online courseware applications, of which one (Blackboard's CourseInfo) was chosen to license on campus. With the availability of CourseInfo on campus, we anticipated a significantly greater interest in learning about online and Web-supported teaching from our faculty. In Fall 1999, we developed a hands-on, face-to-face, 4 hour workshop, focused on CourseInfo's basic features, including communication tools and online assessment tools. The format of all our face-to-face workshops, with lots of hands-on activities and practice interspersed with discussion, was one with which we had had much success in previous years, judging from workshop evaluations. The first CourseInfo Basics workshops were well-attended and received good evaluations. Feedback suggested that the workshops contained too much material, however, so we planned to break out the modules focusing on CourseInfo's communications and assessment tools, and create a face-to-face workshop for each topic.

Designing an Online Course on Teaching Online

In Winter 1999, prior to the courseware pilot, we became eager to develop an online course for faculty, on designing an effective online course. We already provided face-to-face workshops designed for faculty interested in adding the Web to their "traditional" courses; this online course would be for faculty planning the next step of teaching completely online. We were aware that such an online course would have a small audience initially, but had already seen growing interest in the previous year and expected similar or increased growth of interest in the future. The rationale for developing such an online course about teaching online was that the best way to learn about teaching online was to participate in an online course as a student before leading an online course. We hoped participants would gain experience with online teaching tools while learning about good online teaching "by osmosis," so to speak, as they participated in our course.

We initially envisioned an online course of 7 weeks (similar in length to courses offered by commercial training firms) using mainly Web-based tools and discussion boards. We began designing in Summer 1999 with an ambitious course objective: "Faculty who complete this course will be able to design their own effective online course." With our objective and audience in mind, we designed seven one-week modules, beginning with what makes an online course, and progressing through matching technologies with course objectives and instructional strategies, online course management strategies, and plans for course evaluation, among others. We focused course readings and discussion on basic good course design principles, and online course design and management, and planned activities to build on one another, resulting in faculty completing the course with an online course syllabus and one completed course unit. We planned to offer our online course first in Fall 1999.

As we moved through the design process for the 7 week course, though, and as we interacted with the many faculty involved in the online courseware pilot (see above) we began to rethink some of our earlier decisions regarding our online course, such as: the most appropriate length, the best format, the nature of the faculty participation, and the course content.

Course Length

Although we originally designed a 7 week course, which we planned to fit within the middle two months of a semester, we were concerned both with the amount of material we planned to address, and the overall length of the course. Would faculty (especially the many part-time faculty) be willing to devote 7 weeks to what is essentially a non-credit course? Beyond the "bleeding edge" faculty we knew, how many others would be interested in such an in-depth experience at that time? These questions, and concerns about how they related to course format, continued to surface in our design meetings.

Course Format

Rather than offer a 7 week course, we considered several shorter modules, from 1 to 3 weeks in length, still with the same overall course objective. A benefit of the shorter modules was that more faculty might be interested in taking them, if they didn't have to commit 7 weeks at a time to the course. This possibility lead to more questions: would the modules be considered individual short courses, to be taken in any order desired? If so, we'd need to significantly redesign our online course activities. If not, and the modules would need to be completed in a given order, how administratively could we track who had completed which modules?

Faculty Participation

Directly related to the questions of course length and format were questions about mode of faculty participation in the course(s). Ensuring faculty interaction and communication during the course was a priority for us; we hoped they would teach each other and we would act more as facilitators than instructors. This lead us to design course activities involving much online interaction and discussion, and suggested that the course as we envisioned it would not work as well in an individual study format. Whether the course was offered as a 7 week course or shorter modules, we knew that we wanted faculty involved as a cohort, who would start and finish the module or course together.

Course Content

As we debated the course structure, we also were concerned that the course content focused too heavily on course design theory, which might be off-putting to some participants interested in more "practical" information. We determined to focus more on online course practice (what works and what doesn't, concerns about teaching online, etc.) and let considerations of online course design be addressed in more subtle ways, such as in the design of our course itself.

First Round Decisions

At the end of the first round of our design process, we had made some decisions about how to proceed with our online course: continue with a cohort-based course shorter than 7 weeks, provide plenty of opportunities for participant interaction, focus on online teaching practice, and give participants experience with a variety of teaching technologies and the knowledge to choose the best tools for their course. We also planned to delay first offering the course until Winter 2000, to better focus on intensive faculty training in CourseInfo in Fall 1999.

Transitioning from Online Course to Online Workshop

In late Fall 1999, then, our office was pursuing two design projects: two new face-to-face workshops in CourseInfo, and redesign of our online course as described above. At this time, we began to realize that we could dovetail the two processes, and design two online workshops incorporating information about CourseInfo's features, rather than one online course and two face-to-face workshops. The online workshops would be long (1 week) relative to our face-to-face workshops, and so would offer much more time for reflection about online teaching. They would provide faculty with experience learning online, practice with a variety of tools for teaching online, and guidance for designing activities for their own online course. Finally, in a change from our original audience, we specifically designed these workshops for both faculty teaching online, and faculty teaching Web supported "traditional" courses. Given the then-current numbers of WSU faculty engaged in totally online teaching, we were confident that this combination of short, totally online, practice-oriented but discussion-based workshops would meet the existing needs of Wayne State faculty better than the 7 week online course originally designed.

Participant Feedback and Workshop Modifications

Online Communication Workshop

As originally designed, this online workshop was a modification of a pre-existing face-to-face workshop which focused on learning about e-mail, electronic discussion lists, Web-based discussion boards, and synchronous chat as methods of communicating with students online. The online workshop objectives were to provide faculty with experience using all four tools, and enough knowledge to decide if they'd like to use any of the tools in their courses, and, if so, which one(s). We took a "use it to learn it" approach, and offered plenty of opportunities for discussion about pros and cons of each tools.

The workshop was first offered in January 2000 and, although enrollments were not high, those who participated were fairly active. The major feedback we received from the participants was that there was too much to do in one week: either the amount of material or the length of the workshop needed adjustment. We made both changes, and offered this workshop in April 2000 as a three week long online workshop, devoting one week each to electronic discussion lists, Web-based discussion boards, and chat. Again, the number of participants was low, but feedback suggested that the ratio of amount of content to time was more appropriate with 3 weeks, although 3 weeks was perhaps a bit long (there was some participant drop-off toward the end of that period). We modified this workshop yet again to its current length of two weeks based on this feedback.

Online Assessment Workshop

This workshop was originally designed to focus discussion on questions and concerns surrounding online testing, and to result in faculty determining for one of their courses if online testing was appropriate. Again, we first offered this workshop in a one week long format and, again, the original enrollments were low. Faculty drop-off and incomplete assignments during this workshop suggested that, while the workshop length might have been appropriate, the workshop content needed to be "meatier." Specifically, faculty who do not use testing for assessment would have benefited from a broader scope, as well as considering other forms of assessment that work on the Web. Based on this feedback, this workshop has been redesigned to include investigating many types of online assessment and learning about CourseInfo's online testing tools. Faculty participants also plan what forms of online assessments would be appropriate for one of their courses.

Workshop Enrollments and Participation

The first one or two sessions of each online workshop were offered during the Winter 2000 semester, and were advertised on OTL's regular (paper) calendar, mailed to faculty bi-monthly. E-mails also went out to small groups of faculty who we thought might be interested. As mentioned, enrollments in the first several online workshop offerings were fairly low (between 5 and 10 faculty), and active participation was about 50% of those enrolled. The most recent online workshops offered in June 2000, in the new two week format, were advertised solely via e-mail to several relevant OTL mailing lists (reaching a total of about one third of WSU's 2700+ faculty). For these, we have capped enrollments at around 30 each, and have waiting lists. Our impression is that the direct e-mail advertisement and summer workshop date combined to increase enrollments substantially for these sessions.

Summary

In designing and developing our online offerings we began with an ambitious plan for a 7 week online course meant to help faculty learn how to design an effective online course by actually doing so. Our own interactions with Wayne State faculty, knowledge of their developing needs, and feedback from initial workshop offerings lead us to redesign our course in terms of its length and content. We currently offer two two-week online workshops, each focusing on specific practices related to effective online teaching. The workshops are designed to allow maximum benefit to faculty through short, pertinent readings and assignments requiring interaction with other participants, while requiring minimal time commitments from busy faculty. Feedback from initial faculty participants in our online workshops has been excellent, and we feel these workshops have been an effective "first step" to online teaching for our faculty. With these online workshops, we have begun to identify an audience of faculty actively interested in design of online materials and courses, who are now inquiring about our office's plans to offer an online course about designing online courses. Happily, we are prepared with just such a course, and feel that it will now be very well received.

Biographical Sketch

Amy Campbell is the Assistant Director for Instructional Technology at Wayne State University's Office for Teaching and Learning. In that position, and in a previous position in the Office, she has developed and led numerous workshops on teaching effectively with technology, and has consulted with many faculty on instructional technology projects. Ms. Campbell holds an M.S. in Biology from the University of Michigan, and has taught at the University of Michigan and at Washtenaw Community College in Ann Arbor, MI.

Address: Office for Teaching and Learning
2210 Adamany Undergraduate Library
Wayne State University
Detroit, MI 48202
E-mail: aa2926@wayne.edu
URL: http://www.otl.wayne.edu
Phone: (313) 577-6512
Fax: (313) 577-7578

Building a Learning System
Using a Combination of Classroom and Distance Learning

Mary Campbell
Global Leadership Institute/Intellinex,
A Wholly Owned Subsidiary of Ernst & Young

Sandra Merchant
Global Leadership Institute/Intellinex,
A Wholly Owned Subsidiary of Ernst & Young

Introduction

The New Manager Learning System is a comprehensive program designed to support Ernst & Young's newly promoted managers in their transition from individual contributors to leaders of teams of professionals. Approximately 500 consulting professionals have taken part in this career acceleration program each year for the last two years. These individuals experience a significant shift in responsibilities that require the use of different roles, different competencies, and also a different mindset. No matter how well done, a celebratory or one-time training event cannot support the level of learning needed; whereas, a learning system continues to provide support and learning throughout the year.

In addition to a standard classroom kick-off event, we make significant use of distance learning technology within the year-long system. Some sessions are conducted using our LEAP desktop channel which combines web site use with live audio, web-based learning, and a connected classroom. Our most recent session engaged the counselors who support these managers by bringing them into the classroom live via a distance learning event.

Objectives

When designing a new learning system for internal or external users, executive sponsors, key stakeholders, and designers gather for an accelerated session known as a Performance Solutions Environment (PSE) to scope out the objectives for the system or program and create a high level design. It is possible in two days to complete tasks and reach agreement that formerly took weeks or months to finalize. The objectives we derived from this session to guide the design of the New Manager Learning System were:

- To support the attainment of appropriate levels of "performance readiness" and create a positive impact on the project, team, and staff performance as well as client/customer service delivery, profitability, organizational performance and growth goals, and staff retention
- To support managers efforts to develop staff for current and future responsibilities, and to build/strengthen relationships with clients/customers
- To support the achievement of greater executive leverage—how those managing managers may be utilized
- To increase the attraction of candidates to managerial roles and help to retain them

Design of the Learning System

After defining the objectives, we continued to work in teams within the PSE to develop a high level design that would support the transition needs of the new managers and help them develop the competencies need to excel in their new roles. The roles we defined were:

- **Developing Others** through coaching and feedback, and the creation of opportunities for others to expand their capabilities.
- **Managing Work**, including structuring and scoping; establishing, maintaining and enforcing standards; monitoring progress, surfacing and resolving issues; communicating organizational imperatives; and intervening to deal with performance or work habit-related problems.
- **Developing Teams**, including helping others deal with interpersonal tensions, and working through conflicts in a way that produces outcomes valuable to all stakeholders.
- **Exercising Influence** to deal with problems and opportunities across internal and external organization boundaries (including with clients/customers and in the community), as well as up and down formal and informal hierarchies.
- **Leading**, in the sense of creating a visionary perspective on the importance of work to be done, inspiring others to work through barriers, helping others take responsibility for success and to lead in their own way, and fostering an environment that supports continual learning and innovation.

As we progressed to define the various components, we also defined additional competencies not attributable to a specific role that are developed through the learning system including: Continuous Learning, Tenacity, Adaptability, Resilience.

The learning system design that developed included components that would be pushed out to all new managers as well as components that individual managers could pull from to meet their specific needs. The kick-off event, the 360° survey, and each manager's checkpoints with his or her counselor or peer advisor were push components for all new managers. Pull components might include various Web based learning experiences as well as optional seminars that individuals could enroll for as needed. The learning system for managers has continued to evolve as we have developed customized versions for clients and/or made revisions to the internal system before each year's kick-off event. Figure 1 shows one variation of this system that was developed for use with an external client.

Criteria Used to Select the Best Channel for Each Component

New managers in the consulting practice typically work on location at a client site. The group as a whole is dispersed across the U.S., and various locations in Europe and Asia. Our initial PSE session had specified a connected classroom based kick-off event for the new managers that would be held in 10 cities around the U.S. to allow for networking and forming a camaraderie with other managers in the group. Even at this live event, counselors for the newly promoted managers were brought in through a desktop channel event that utilized the web for slides but linked the counselors and the new managers through interactive audio channels provided by our

LEAP system. This allowed the counselors to participate in critical segments that discussed the checkpoints without having to leave the client site.

Other components such as optional workshops or Managerial Tools were ideally suited for offering via elearning, such as the web or a desktop channel event that combines both slides stored on a web site and an audio connection with a subject matter expert delivering the material related to the slides. These desktop channel events offer an engaging format that includes polling questions for the participants and the use of a message center and an audio queue to keep the sessions interactive,

In our first offering of the program, we included a 360° survey and executive coaching. A survey was sent out via our e-mail system, Lotus Notes, with paper-based copies made available for client distribution. The coaching was performed on site at the kick-off event. Subsequently, we have acquired an Internet-based survey tool that we use with external clients. This tool makes it possible to survey subjects in any location by e-mailing them the URL for the site and a password. In addition, we now make extensive use of tele-coaching as an alternative to the on-site coaching.

Table 1 shows some of the criteria we used to determine the best channel for presenting learning.

Structuring of Individual Components

As we built each component of the learning system, we attempted to focus on our key strengths in the learning area: content, technology, and integration. We have accumulated a wealth of reusable knowledge objects and mine what is pertinent from these objects when developing any new training. Our strategic alliances with many partners in recent years has broadened the content readily available for use in building components.

In the technology area, we have platforms that support learning in a wide variety of channels and select the channels that best meet the needs of the learning and our business objectives. We also have technology enabled tools that provide a browser-based authoring environment with built-in instructional design components that make it easy for anyone to create course materials. In terms of integration, we have a wealth of experience in integrating learning and performance improvement with our business processes to meet organizational goals.

Although it is not possible to cover the details of all of the components of the learning system, it is worthwhile examining a few that we now handle in a virtual way. The components selected for this are the LEAP Learning Zone, the internet-based survey distribution and development tool, and the desktop channel sessions that allow us to utilize the web and a simultaneous audio broadcast to deliver learning to physically dispersed staff members with interactive capabilities.

LEAP Learning Zone. The Learning Zone is one component of our LEAP's online system. It offers a one-stop dynamic environment in which learners have self-service access to all the relevant learning solutions. In this environment, learners receive personalized, ongoing feedback on their individual learning objectives and opportunities.

The Learning Zone provides a user-friendly environment for employees to learn "just in time" and at their own pace, which translates into greater application and retention of knowledge. Since LEAP is accessible through a web browser, employees have access to what they need, when they need it. LEAP also eliminates the need for travel and reduces scheduling hassles traditionally associated with performance solutions that rely on instructor-led training courses.

The Learning Zone enables learner self service and administrative savings by automatic updates to learning records, certifications, skill inventories, registrations, and other scheduling information. Each employee has their own Personal Learning Home Page. The Home Page contains highly individualized learning profiles, plans, and reports. From there, learners can search multiple knowledge and learning databases to pinpoint learning for specific performance needs. Through their sites, learners can register for courses and events, manage and track learning activities, and access web-based learning products. The Learning Zone has specific features that are useful to the newly promoted managers including:

- The ability to launch web-based learning or computer-based courses, and manage learning completion information.
- The ability to register for classes or place their name on a course waiting lists. Registration includes checking for (and enforcement of) prerequisites, scheduling conflict, capacity constraints, etc.
- Access to learning maps that shows a graphical representation of learning activities that support a specific developmental path.
- The ability to use learning plans to set learning objectives and track skill improvement.

Internet-based survey distribution and development tool. The 360^0 survey designed for the first New Manager Learning System was delivered through our Lotus Notes system. Although it supported the need of the program, individuals working in a foreign country not supported by Lotus Notes as well as individuals wanting to secure client input had to resort to paper-based survey distribution and progressing.

We have recently started to use an internet-based survey tool that will allow us to deliver not only the 360° survey, but unlimited other assessments such as an organizational culture assessment or customized instruments. Advantages of our latest approach include:

- Anyone with Internet access and the proper password can complete the needed information anytime and anywhere.
- Surveyed employees can access feedback and developmental suggestions via the Internet.
- Development plans can be tracked online.
- Unlimited assessment instruments can be stored on the Oracle-based tool.

Desktop channel events. Desktop channel events combine the accessibility of the Internet and telephone audio to deliver information to a geographically disperse group. The moderator, presenters, and participants can each be in a different location, yet participate interactively in these session. All that is needed to participate is a telephone connection and a local or remote Internet connection. Special features such a polling questions and a message center allow for the design of a highly interactive program.

As a subject matter expert presents the information, each participant is able to see the information on their computer screen and listen to it via the audio channel. Participants can place a request to ask a question or make a comment in the audio queue, but their phone is muted until the coordinator introduces them. The results of polling questions can be shared with the entire group as multiple choice questions are presented in this fashion. In addition, a message center capability allows for more in-depth answers to questions which can be shared with the group at large. Additionally, presenters are aware of all participants logged into a session and can ask questions on an ad hoc basis to keep everyone engaged.

These events are useful throughout the learning system and have been used to prepare the counselors of the new managers as well as to present special topics throughout the year.

Parallels to This Learning System Developed for Other Needs

The virtual classrooms and virtual seminars we utilize for the New Manager Learning System have parallels throughout the work we do for internal Ernst & Young as well as external clients. We have used them to educate thousands of employees in ebusiness fundamentals or to deliver technical training for audit and tax professionals. Virtual classrooms are optimized around one instructor and 15 to 20 students and last between 45 minutes and three hours. Virtual seminars may have as many as 1,000 students with a presenter and assistants and last between 30 minutes and one hour.

Virtual classrooms are very effective for:

- Keeping a sales force up to date with one to two hour sessions.
- Updating enterprise resource planning users.
- Rolling out new, customized IT tools to a relatively small group of dispersed users (less than 200).
- Training a dispersed group in which customer satisfaction needs to be very high, such as when the course provider is realizing premium revenue from the students.

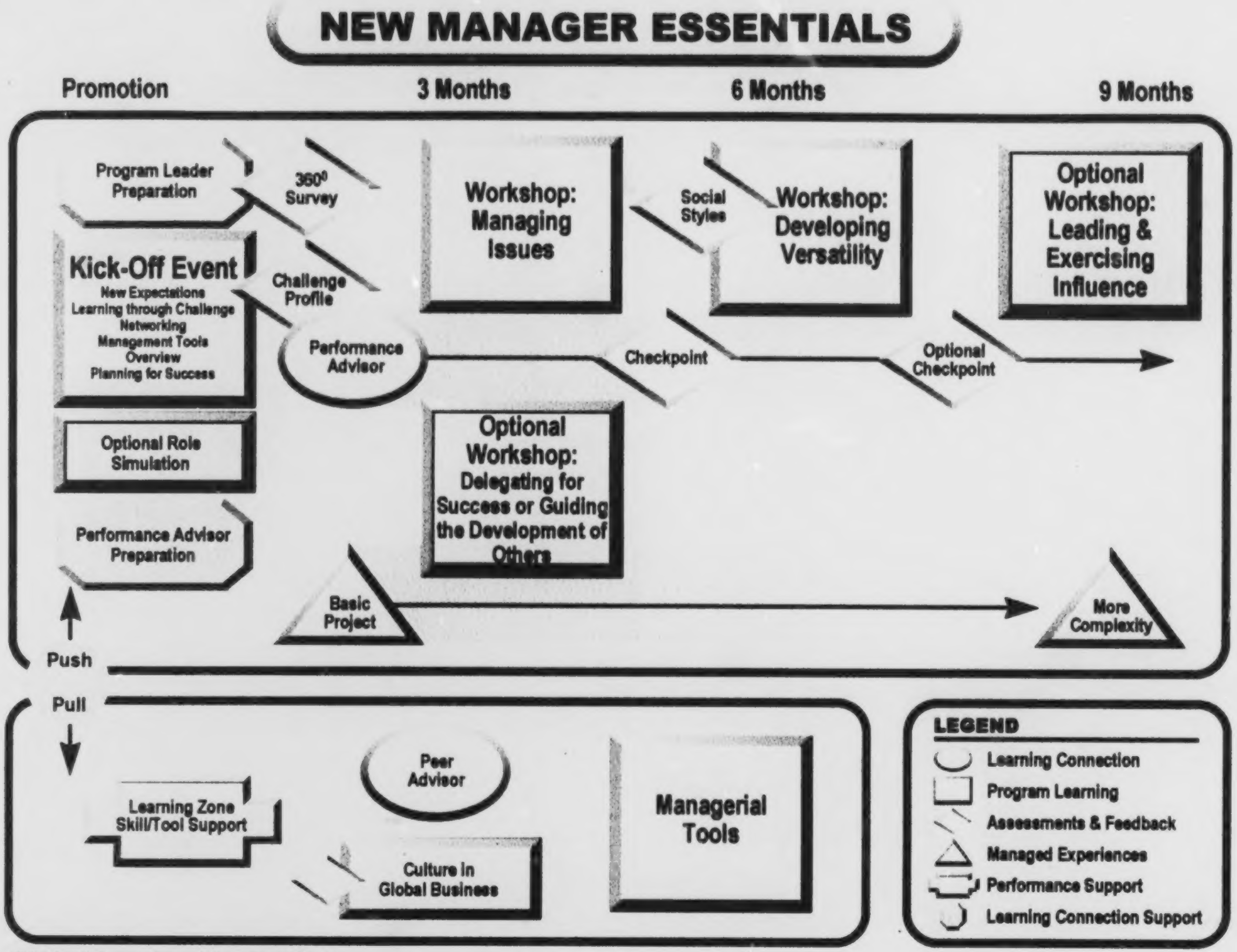
Virtual Seminars are very effective for:

- Getting some "mind share" from a large group, such as a sales seminar in which the goal is to reach to potential customers.
- Creating new visions and directions for a corporate audience.

Conclusion

The New Manager Learning System has made a significant difference to newly promoted managers in our consulting practice. It has resulted in speed to performance and increased satisfaction which has reduced turnover among this group. The model for this program has also been used effectively in designing a similar program for outside clients as well as other groups within the firm.

Figure 1 follows:



NEW MANAGER ESSENTIALS

Promotion
3 Months
6 Months
9 Months

Program Leader Preparation

360⁰ Survey

Kick-Off Event
New Expectations
Learning through Challenge
Networking
Management Tools Overview
Planning for Success

Challenge Profile

Performance Advisor

Optional Role Simulation

Performance Advisor Preparation

Workshop: Managing Issues

Optional Workshop: Delegating for Success or Guiding the Development of Others

Basic Project

Social Styles

Workshop: Developing Versatility

Checkpoint

Optional Checkpoint

Optional Workshop: Leading & Exercising Influence

More Complexity

Push

Pull

Learning Zone Skill/Tool Support

Peer Advisor

Culture in Global Business

Managerial Tools

LEGEND
- ◯ Learning Connection
- ☐ Program Learning
- / Assessments & Feedback
- △ Managed Experiences
- Performance Support
- Learning Connection Support

Global Leadership Institute

[illegible]

e

BEST COPY AVAILABLE

In creating the New Manager Learning System we used a tool like this after deciding that a learning product was needed as a part of the performance solution. You can use this tool to help you determine the most appropriate and cost-effective delivery medium.

- Read each question and circle each item to the right of the question that applies. For example if your response to question 4 is ">200," then circle every ">200" to the right of that question.
- After answering each question, total up the number of items circled in each column. The highest number of circled items will indicate the type of delivery you should consider.

Table 1
Delivery Decision Matrix

		Classroom	**Satellite**	**Video Conference**	**Desktop Channel**	**Tele-training**	**Web-based Learning**
1.	What type of learning is involved?	Application	Awareness/ knowledge	Awareness/ knowledge	Awareness/ knowledge	Application/ knowledge	Awareness & Knowledge
2.	How frequently does the content need to be delivered?	> 1-2 times a year	1-5 times in a short time frame	1-2 times in a short time frame	1-5 times in a short time frame	> 5 times	> 20 times a year
3.	How accessible does material need to be to the participants?	When a sufficient number of participants exist	On relatively short notice	On relatively short notice	On relatively short notice	Just in time	Just in time
4.	How many people in *total* need to be trained?	> 100	> 200	100 - 200	>50	> 100	> 200
5.	What is the potential audience size *per session*?	< 30	> 200	100 - 200	>50	<10	1
6.	How widely dispersed are the potential participants?	Centralized near a single training location	In many, widely-dispersed locations	In 15 - 20 locations	In many, widely-dispersed locations	In many, widely-dispersed locations	In many, widely-dispersed locations
7.	How soon do you need it?	In 2 - 3 months	2 - 6 weeks	4 - 6 weeks	4 - 6 weeks	In one month	1 - 2 months-
8.	What is the anticipated length of the program?	> 4 hours	1 - 4 hours	1 - 3 hours	1-3 hours	< 1 hour	1- 4 hours in smaller lessons

		Classroom	Satellite	Video Conference	Desktop Channel	Tele-training	Web-based Learning
9.	How many individuals are skilled and available to lead the program?	> 6	One or two	1 - 6	One or two	< 5	N/A
10.	Do the potential leaders have strong facilitation or presentation skills	Facilitation	Presentation	Presentation	Presentation ("talk-radio" ability)	Facilitation	N/A
11.	How stable is the content?	Very stable	Dynamic	somewhat stable	somewhat stable	Very stable	Very stable and well-documented
12.	What is the likelihood that the material will need to be reused or delivered more than once.	Very likely	Not too likely	Not too likely	Likely	Very likely	Very likely
13.	What is the shelf life of the content?	> 1 year	1 month or less	< 1 year	1 year	1 year	> 1 year
14.	How strong is the need for participants to work in teams?	High	Low	Low	Low	Low	Low
15.	How strong is the need for participants to network during the session?	High	Medium	Medium	Low	Low	Low
16.	What level of technology infrastructure is necessary?	None or a network connection	Access to a satellite provider and a facility with satellite downlinks	Access to video conferencing; Network connection	Access to EY network and access to a telephone for the audio conference	Telephone and Network connections	Network connection

Biographical Sketch

Ms. Campbell and **Ms. Merchant** both have over twenty years of experience designing learning for professionals and working in the areas of leadership and organizational change. Both individuals have facilitated workshops, information sessions, and course sessions within E&Y and outside the firm.

Address: Mary Campbell
Ernst & Young Global Leadership Institute
1300 Huntington Building
925 Euclid Avenue
Cleveland, OH 44115
E-mail: mary.campbell@ey.com
Phone: (216) 583-2776
Fax: (216) 583-2099

Address: Sandra Merchant
Ernst & Young Global Leadership Institute
1300 Huntington Building
925 Euclid Avenue
Cleveland, OH 44115
E-mail: sandra.merchant@ey.com
Phone: (216) 583-1934
Fax: (216) 583-2099

Tutor Personality as a Contributing Factor of Teaching Effectiveness in Distance Education: A Conceptual Framework Based on the Myers-Briggs Type Indicator

Bobbie Chan, Assistant Professor
Open University of Hong Kong

Introduction

Tutors and tutorials are important components within a distance education system. Tutors act as the link between the institution and the learners, whilst tutorials serve as valuable opportunities for learners to have face-to-face meetings with tutor and fellow students to discuss course issues. Distance learners are mostly working adults and tend to be more intrinsically motivated than their younger counterparts (Harper & Kember, 1986). As Beaudoin (1990) states, tutors engaged in distance education must be adept at facilitating students' learning through particular attention to process, unlike classroom-based teachers whose traditional role is largely confined to selecting and sharing content.

Personality is a major factor affecting how a tutor communicates and deals with students. Obviously, this does not imply that other factors are unimportant. Tutor's personality is an important individual difference that distance educators need to take into account in order to understand why tutors perform as they do. Yet personality is a largely unexplored aspect of distance education. This is rather surprising in light of the prominence of tutors in the education process of adult learners in distance education. There is little published research about teachers personality in education, and even less in distance education. Building on previous research findings that the environment is, to a large extent, formed by the teacher (e.g., Deci, Schwartz, Sheiman & Ryan, 1981a; Deci, Nezlek & Sheinman, 1981b), this paper attempts to investigate the autonomy-control distinction in the learning environment, which is an important element in interpersonal situations especially in one which involves power differentials, such as the teacher-student relationship. Using the Myers-Briggs Type Indicator, the paper suggests possible relationship between particular personality traits and the autonomy-control dimension.

Teachers' Personality and Classroom Environment: Theoretical and Empirical Foundations

In personality psychology, the trait approach assumes that there is a common set of traits on which we can all be compared. The concept of 'trait' has been used to denote consistent intercorrelated patterns of behaviour, especially expressive or stylistic behaviour (Winter, 1998). Tonelson (1981) suggested that teacher personality can affect student learning outcomes through the psychological environment of the classroom. This environment was essentially the product of the kinds of interactions teachers have with students, and that the character of the teacher is translated into the working social atmosphere of the classroom which influences students. The atmosphere then sets the stage for learning. Whilst these studies were related to teaching and learning in high schools, personality characteristics and classroom management behaviours seem to be related in particular patterns. A number of researchers (e.g. Reeve, 1998; Deci *et al.* 1981a;

Ryan & Grolnick, 1986) suggested that teachers motivate students using interpersonal styles that range from highly controlling to highly autonomy supportive.

Research indicates that a teacher motivating style is an important educational construct (Deci et al., 1981a; Ryan & Grolnick, 1986) because it affects students developmental and academic outcomes (Deci & Ryan, 1987; Deci, Vallerand, Pelletier & Ryan, 1991; Reeve, 1996). Compared to students with controlling teachers, students with autonomy-supportive teachers report greater perceived academic competence (Deci et al., 1981a; Ryan & Grolnick, 1986), higher academic intrinsic motivation (Deci, Nezlek & Sheinman, 1981), greater creativity (Koestner, Ryan, Bernieri & Holt, 1984), more mastery motivation (Ryan & Grolnick, 1986), greater conceptual understanding (Flink, Boggiano & Barrett, 1990; Boggiano, Flink, Shields, Seelbach & Barrett, 1993), positive emotionality (Patrick, Skinner & Connell, 1993; Williams, Weiner, Markakis, Reeve & Deci, 1994), lower dropout rates (Vallerand, Fortier, & Guay, 1997), as well as higher academic performance (Boggiano et al., 1993).

Using the MBTI and another instrument, Fisher and Kent (1998) found significant associations between teacher personality type and perceptions of classroom environment. For example, both students and teachers perceived greater student cohesiveness in the classes of extraverted teachers. Martin and Baldwin (1993) study revealed that teachers scoring more interventionist (controlling) tended to be less venturesome and inhibited, more practical, and more astute and aware of social conventions as measured by the 16PF. Barrett (1991) showed that certain personality types have a positive relationship to a number of important teaching effectiveness competencies and that certain styles have greater ease or difficulty in achieving high effectiveness scores. Hamza and Nash's 1996) study showed that teachers of particular character traits (viz. approachable, personable, creative, caring, flexible, knowledgeable, energetic, interesting, motivating, imaginative, innovative, aesthetic, seekers of possibilities, leaders, insightful, original and unique) are better able to foster a learning environment that promotes creative thinking and problem-solving skills.

In distance education, the role of the tutor is facilitative rather than didactic. An important aspect of the tutor's role is that of assisting the student to become independent learners. According to Barrows (1988), to become independent of the tutor, to develop the ability to solve problems and to be able to learn on their own, students must not be put into passive learning situations where the tutor determines what should be learned, to what depth, and in what sequence. Instead students should be able to practice dealing with problems and learn to identify what they need to learn in that process. To facilitate student independence and foster students' critical thinking and self-directed, continued learning, the tutor should guide the students in their thinking and to stimulate them to be reflective, carefully reasoning thinkers and not impulsive ones. In this regard, autonomy-supportive strategies seem to be more appropriate than controlling strategies to be adopted by tutors in tutorials in distance education.

Relationship Between the MBTI and Autonomy-Control Distinction

Introversion vs. Extroversion

A tutor has to be able to communicate well with students. One of the major tasks of a tutor is to make sure that all students are involved in the group process. When one student expresses an idea or an opinion, the tutor needs to be sure others make whatever comments they may have, that different opinions or points of view are heard. To facilitate student exchanges, the tutor has to be sure that he gets out from being the center of all discussions. If he is not careful, he will find that each student is answering only his questions and that each student is addressing him in the discussions and not each other.

Extroverts like variety and action, are often good at greeting people often do not mind interruptions. They enjoy talking. They can act quickly, sometimes without thinking. They like to have people around them and usually can communicate freely. Introverts like quiet concentration. They have trouble remembering names and faces. They are interested in ideas and dislike intrusions and interruptions. They work contentedly alone and may have some problems communicating.

Accordingly, it seems likely that in a distance education system, tutors with high score on Extroversion dimension would be more strongly associated with autonomy-supportive practices in tutorials. Tutors with low score on Extroversion dimension would be more strongly associated with autonomy-controlling practices in tutorials.

Sensing vs. Intuition

Sensing people focus on the present and on concrete information gained from the five senses whereas intuitive people focus on the future with a view towards patterns and possibilities. Sensing types are thus more realistic and practical. Sensing people can be very uncomfortable with the unknown, and need to have things spelled out specifically. Intuitive people look at the big picture valuing imagination and inspiration. They like to generate new ideas and look at things in a very creative way.

Individuals characterized as Intuitive are imaginative, concept- and learning-oriented, while Sensing types are not. Sensing focus on the present and on concrete information gained from the five senses whereas intuitive people focus on the future with a view towards patterns and possibilities. Sensing types are thus more realistic and practical. Intuitive people look at the big picture valuing imagination and inspiration. They like novelty and the unusual and tend to rely on insights and imagination to provoke discussion. Such description fits well with the autonomy-supportive dimension.

Thus, it follows that tutors with low score on Sensing dimension will be more strongly associated with autonomy-supportive practices in tutorials; and tutors with high score on Sensing dimension would be more strongly associated with autonomy-controlling practices in tutorials.

Thinking vs. Feeling

Thinking people do not show emotion readily and are often uncomfortable dealing with people's feelings. They prefer rules, laws and standard operating procedures, and can be very stubborn once they have made up their mind. Feeling people tend to be very aware of other people and their own feelings. They will consider the effects a decision will have on other people. They have concern for harmony, prioritizing their relationships over the tasks. Where Thinking people may hurt people's feelings without knowing it; Feeling people enjoy pleasing people, even in unimportant things.

It is important for a tutor to be able to adopt more sophisticated approach in handling adult learners. In the small group environment, the student must be able to both recognize and freely admit that he does not know. It must be followed by behaviour that establishes and reinforces this climate. It is also important that the tutor freely admits when he does not know. He should never be seen as critical of any statements of ignorance or of any ideas offered by students, no matter how far off the mark or uninformed they might be.

As such, it appears that tutors with high score on Feeling dimension would be more strongly associated with autonomy-supportive practices in tutorials in a distance education system. Whereas tutors with low score on Feeling dimension will be more strongly associated with autonomy-controlling practices in tutorials.

Judging vs. Perceiving

Judging people like to plan, are organised in life and prefer to have things settled. They want to make decisions, come to a closure and then carry on. Perceiving persons like a flexible and spontaneous approach to life and prefer to keep their opinions open. They like to understand life rather than to control it and are more adaptable and open to experience.

Flexibility and spontaneity are important dimensions of tutors in distance education. Adult learning theories do emphasize that adults should be recognized as mature people with their own agenda. To be effective, the tutor must appreciate that the students have special problems and needs. Perceiving people like to understand life rather than to control it and are more adaptable and open to experience.

Therefore it seems likely that tutors with low score on Judging dimension would be more strongly associated with autonomy-supportive practices in tutorials in a distance education system; and tutors with high score on Judging dimension will be more strongly associated with autonomy-controlling practices in tutorials.

Conclusion

Personality is thought of as a useful construct to explain relatively permanent differences in how a tutor's psychological makeup influences the way in which he or she responds to his or her teaching environment. Although the findings from the literature review must be viewed as tentative and the hypotheses need to be further refined and investigated empirically, it is believed that they raise some important issues that are still relatively unexplored about the impact of tutor's personality on group process and effectiveness. Tutors characterized by a high degree of extroversion, intuition, feeling and perceiving are strongly associated with autonomy-supportive practices in the classroom environment. On the other hand, the autonomy-controlling style is widely used by tutors who are characterized as introvert, sensing, thinking and judging. Different tutor preparation strategies and in-service training programmes need to be planned to meet diverse strengths and weaknesses of tutors with respect to different personality types.

References

Barrett, L. A. (1991). *Relationship of observable teaching effectiveness behaviours to MBTI personality types*. Paper presented at the Ninth International Conference of the Association for Psychological Type.

Barrows, H. S. (1992). *The tutorial process*, Springfield: Southern Illinois University of Medicine.

Beaudoin, M. (1990). The instructor changing role in distance education. *The American Journal of Distance Education, 4*(2), 21-29.

Boggiano, A. K., Flink, C., Shields, A., Seelbach, A., & Barrett, M. (1993). Use of techniques promoting students self-determination: effects of students analytic problem-solving skills *Motivation and Emotion, 17*, 319-336.

Deci, E. L., Schwartz, A., Sheiman L., & Ryan, R. M. (1981a). An instrument to assess adult orientations toward control versus autonomy in children: Reflections on intrinsic motivation and perceived competence. *Journal of Educational Psychology, 73*, 642-650.

Deci, E. L., Nezlek, J., & Sheinman, L. (1981b). Characteristics of the rewarder and intrinsic motivation of the rewardee. *Journal of Personality and Social Psychology, 40*, 1-10.

Deci, E. L., & Ryan, R. M. (1987). The support of autonomy and the control of behaviour. *Journal of Personality and Social Psychology, 53*, 1024-1037.

Deci, E. L., Vallerand, R. J., Pelletier L. G., & Ryan, R. M. (1991). Motivation and education: The self-determination perspective. *Educational Psychologist, 26*, 325-346.

Fisher, D. L., & Kent, H. B. (1998). Associations between teacher personality and classroom environment. *Journal of Classroom Interaction, 33*(1). 5-13.

Flink, C., Boggiano, A. K., & Barrett, M. (1990). Controlling teaching strategies: Undermining children self-determination and performance. *Journal of Personality and Social Psychology, 59*, 916-924.

Hamza, K., & Nash, W. R. (December 1996). *Creating and fostering a learning environment that promotes creative thinking and problem solving skills*. Research Report (ERIC Document ED 406435)

Harper, G., & Kember, D. (1986). Approaches to study of distance education students. *British Journal of Educational Technology, 17*(3), 212-222.

Koestner, R., Ryan, R. M., Bernieri, F., & Holt, K. (1984). Setting limits on children behaviour: The differential effects of controlling versus informational styles on intrinsic motivation and creativity. *Journal of Personality, 52*, 233-248.

Martin, N. K., & Baldwin, B. (1993). *Validation of an inventory of classroom management style: differences between novice and experienced teachers* Paper presented at the Annual Meeting of the American Educational Research Association, Atlanta, GA.

Reeve, J. (1996). *Motivating others: Nurturing inner motivational resources*, Boston, MA: Allyn & Bacon.

Reeve, J. (1998). Autonomy support as an interpersonal motivating style: Is it teachable? *Contemporary Educational Psychology, 23*, 312-330.

Ryan, R. M., & Grolnick, W. S. (1986). Origins and pawns in the classroom: Self-report and projective assessment f individual differences in children perceptions. *Journal of Personality and Social Psychology, 45*, 736-750.

Tonelson, S. W. (1980). The importance of teacher self-concept to create a healthy psychological environment for learning. *Education, 102*, 96-100.

Vallerand, R. J., Fortier, M. S., & Guay, F. (1997). Self-determination and persistence in a real-life setting: Toward a motivational model of high school dropout. *Journal of Personality and Social Psychology, 72*, 1161-1176.

Williams, G. C., Weiner, M. W., Markakis, K. M., Reeve, J., & Deci, E. L. (1994). Medical students motivation for internal medicine. *Journal of General Internal Medicine, 9*, 327-333.

Winter, D. G., John, O. P., Stewart, A. J., Klohnen, E. C., & Duncan, L. E. (1998). Traits and motives: Toward an integration of two traditions in personality research. *Psychological Review, 105*, 230-250.

Biographical Sketch

Bobbie Chan is an Assistant Professor in the School of Business Administration at the Open University of Hong Kong. Currently she is studying the relationship between tutor's personality and teaching effectiveness in distance education.

Address: A0823, 8/F
Open University of Hong Kong
30 Shepherd Street

Homantin, Kowloon
Hong Kong.
E-mail: bbchan@ouhk.edu.hk
Phone: (852) 2768 6923
Fax: (852) 2391 9095

Hong Kong Adult Education Concerns for Internet Technology

Bruce, Siu Nang Cheung
Program Director
School of Professional And Continuing Education (SPACE)
The University of Hong Kong

Venus, Wai Ling Yung
Assistant Computer Officer
School of Professional And Continuing Education (SPACE)
The University of Hong Kong

With the speedy influence of Internet Technology in Hong Kong, the educational organizations have already adopted various approaches to keep themselves in line with the dynamic market. Some of the schools have joined together and created a united network for encouraging the information sharing among schools and universities. Hong Kong government also provoked the development of Information Technology as one of the directions that brings Hong Kong into the new age of millennium.

To confront both the external and internal changes of the environment, The School of Professional And Continuing Education (SPACE) at The University of Hong Kong has been playing a major role in the Internet Technology revolution in the community. This paper describes the directions and approaches that the School has performed to keep enhancing the technological growth of the market. Details including the analysis of adult student characteristics, how their needs should be fulfilled through adult learning, how the School upgrades her ability to serve the technological demands, and finally the management perspectives to the entire settings.

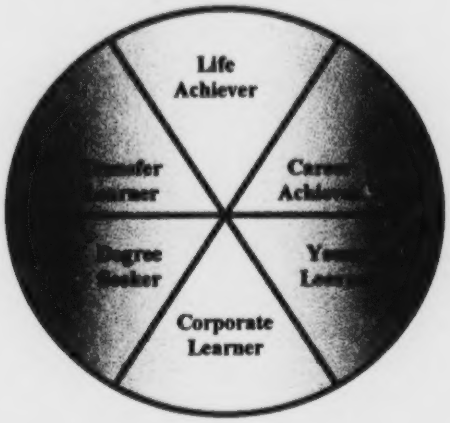
SPACE Background

In this era of millenium year, emerge of Internet Technology (IT) became another type of revolution for our society. Many commercial companies applied IT to increase the market penetration, improve the company image or create more sophisticated features for the products. With IT, academic sectors and organizations can achieve their sublime educational objectives to the community with ease.

Since most of the people in Hong Kong get used to the competition at their early ages, they realized very well besides experiences, academic fulfillment is also a crucial factor to success in the careers. Therefore, a trend for further education to upgrade one's capability became very popular in the society. In order to assist them to achieve their goals, the HKU School of Professional And Continuing Education (SPACE) offers courses for various groups of learners for further education. SPACE is the extension arm of The University of Hong Kong, which provides the community with lifelong education. It offers more than 100 award bearing programmes ranging from community college, professional diploma to graduated or even master degree. The SPACE enrollment of last year was more than 90,000, which equivalents to more than 14,000 full time enrollments. With the rapid growth of technology, SPACE also began to apply it into adult learning education for facilitating the study achievements of adult learners. To accomplish this aim, there are lots of issues that have been encountered in the School. Since this technological move is a significant change to the entire School, it is inevitably that many aspects should be concerned to ease the complexity of the process. The following sections of this paper will describe the categories of adult learners in Hong Kong, their needs and attitudes towards learning, the suitability of technology in the adult education, the reactions of the School management as well as the general direction of future growth.

Characteristics of Hong Kong Adult Learners

Referring to the database records at the School, Hong Kong adult learners are normally came from the professional disciplines of Accounting, Arts & Humanities, Business & Finance, IT & Science, Law, Real Estate & Insurance, Social Science & Education, and also Traditional Chinese Medicine. There are six main types of characteristics.



<Chart 1> Hong Kong Adult Learner Types.

For the Life achiever, they tend to achieve further self-developments in their personal lives and therefore back to study. Career achiever aims at advancing their own careers or attaining knowledge to change careers. Young learners are those left schools at an earlier age by one reason or another, then come back to carry on studying after a few years. Transfer learners tend to obtain the credits through joining course, then move onto another course by using the credits as a prerequisite for either an examination or enrollment. Degree seekers are the adult learners who need to balance work, family and educational goals. They are those who complete a degree program at an older age. Finally, corporate learner is the group of learners who are sent to the course by the employers to advance their careers by accomplishing better education. With this analysis, we can easily realize adult learners need to balance their learning projects against the constraints of time, space, economic resources, and personal relationships. It is important for them to join a course with self-directed and flexible learning components.

On November 1998, the Hong Kong Government formulated the *'Digital IT Strategy'* to set out the vision, initiatives and targets on how Government, business, industry and academia can work together to make Hong Kong a leading digital city in a globally connected world. Through the

BEST COPY AVAILABLE

latest developments in Information Technology, this strategy aims at improving the communication within the Government and providing better services to the public (Hong Kong Government, 1999). Recently, the CEO of AOL in Hong Kong raised out that in ten years' time, Information Technology professionals would be in shortage by at least 50,000. The Hong Kong government shared the same vision and determined to work out a solution for the problem. Adequate resources have been provided for training Information Technology professionals.

After perceiving the insight from local government on the use of IT, SPACE began to perform various researches and studies (Cheung & Yiu, 1999; Cheung, Yiu, & Ho, 1998) to investigate the breakthrough on how current technologies can assist adult learners in reconciling their lives among work, family and study. With the understanding of their characteristics, we tried to provide facilities to meet their study needs. We have designed questionnaires to collect the attitudes and technological skills from different learners for serving their study tasks wholly (SOUL, SPACE, 1998).

How Internet Technology Accomplishes Goals for Adult Learners

Adult learners always need to balance life among work, study and family. It is understandable that their performances will be degraded if conflicts arise among these factors. Also, lack of social interaction and communication between peer groups and teachers becomes another barrier for the adult learners to perform well in their studies. In fact, our study (SOUL, SPACE, 1998) found out Internet technology is capable of providing channels for adult learners to facilitate their learning. With the use of Internet, adult education can easily initiate the social relationship motivators through the communicative channels of e-mail, on-line conferencing and the use of Web Publishing which allow users of all ages to communicate with each other effectively. Through the atmosphere stimulated by the instructor at the online discussion forum, the result of the interaction gets richer and more experiences are being shared and exchanged among users.

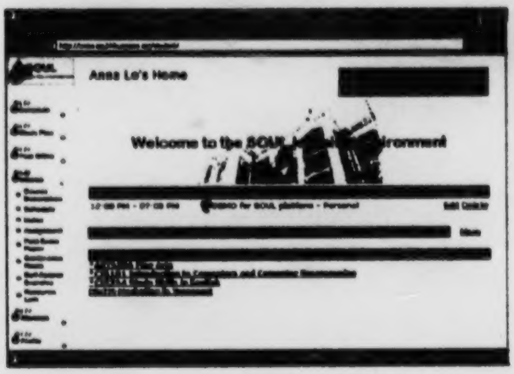
Internet allows learners to spend more time in performing higher-order cognitive process (Fetterman, in press). With the exposure of information sharing on the Internet, learners can obtain fast solutions to their problems, come up with a quick solution for their daily problems encountered at work and, therefore, to reduce learning needs. It helps the learners to review and retrieve the required work information, and also to access various learning guidance tools and templates for supporting their learning process. As suggested by some other researchers, the Internet also has the advantages of affording the adult learner self-direction and flexible learning from a learning perspective. Gray described that the Internet could probably be classified as one of the most powerful and important self-directed learning tools in existence (Gray, 1999). Also, Schrum indicated that students in the on-line courses reported successful experiences when they were strongly motivated to participate, moved quickly through activities, had some experiences with computer before and felt comfortable directing their own learning (Schrum, 1998).

Moreover, as (Cahoon, 1998) has mentioned that no matter if the style of student is self-directed or not, flexibility of learning is still an important element for adult learners. Hendrikx, Duval, and Olivie (1995) recommended that the use of hypermedia data model with the resources including texts, images, animations, and interactive tests formats in the hypermedia environment such as

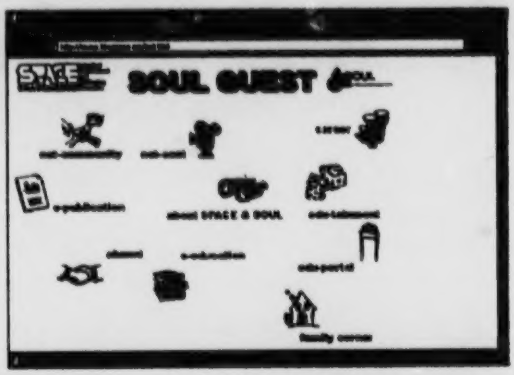
World Wide Web allows more flexibility in designing the model for learning materials (Hendrikx, et al.). All of these researches and findings are supporting the application of Internet technology for learning interactively with high participation, self-direct and flexible learning components. These elements turned out to be crucial factors for adult learners to advance their learning.

Technological Upgrades of SPACE for Fulfilling the Adult Education Market

Having identifying the demands of the Adult Education market, SPACE then launched an Internet online learning platform, SPACE Online Universal Learning (SOUL), to assist the course delivery tasks as a supplement tool on March 1999 (SPACE). It incorporates the interactive multimedia functions to serve the adult learners in achieving different study objectives with personalized interface. They are namely My Schedule, My Study Plan, My Post Office, My Course, My Message and My Profile as shown in Figure 1. Each of these functions is well designed for serving different purposes as checking schedules, managing study plan, performing E-mail tasks, obtaining course materials, participating online quiz and discussion, enlarging reference network, reading announcements and checking personal profile etc. To enhance the completeness of course delivery in an Internet mode, after a few months' usage of the student module, a teacher module is launched for the educators to participate with the student adult learners. A few months after launching the teacher module, another module is developed for guest visitors to obtain the latest online development directions. Please refer to Figure 2 for details.



<Figure 1> SOUL Student Personalized Home Page.



<Figure 2> SOUL Guest Module Home Page.

When SOUL is designed for the adult learners, educators and guests, highly secure approaches are implemented to protect their identities and personal data. With continuous efforts of SOUL developers, SOUL is finally equipped with the advanced secure cryptography features and user-friendly interface (Cheung, Hui, Yim, & Yung, 1999).

Management Perspectives and Actions

Having understood the SOUL development, it is not difficult to imagine supports from the management are critical to the entire development at SPACE. In order to start and proceed with the growth of SOUL, it is inevitably to require budgets and resources from the senior

BEST COPY AVAILABLE

management. Firstly, It was a group of academic professionals with IT, Adult Education, Conventional Education and Language teaching backgrounds who initially formed a SOUL R+D team at June 1998 to explore the online platform for adult education. Half of them are Ph.D. with outstanding results in their research areas. With ongoing discussions and planning, this team proposed to the Senior management of the School that another team of online course development should be formed. Finally a SOUL development team is formed to implement these ideas as shown in Table 1.

Date	**Budget Requested**	**Budget Approved**	**Remarks**
August 1998	2 PT RAs	2 PT Ras	To carry out research on the feasibility of SOUL & perform survey research
October 1998	8 FT ACOs	1 FT ACO	Prototype of SOUL online platform
June – October 1999		3 FT ACOs	Full scale online system implementation
December 1999		1 FT ACO	Development of Online Commerce content
January 2000	2 FT ACOs	2 FT ACOs	Online courses development
Total:	**Requested**		**Approved**
	2 PT Ras		2 PT RAs
	8 FT ACOs		7 FT ACOs
	2 FT ACOs		2 FT ACOs
	Additional cost for purchasing hardware and software for system development		Equipment cost for servers and operating system with HKD 860,000 and HKD 340,000 respectively.

Note: RA=Research Assistant, ACO=Assitant Computer Officer, PT=Part time, FT=Full time.
<Table 1> History of Development Team Formation

SPACE is a non-government, self-financing and non-profit making organization. We have no R+D department in the School. Compare to commercial organizations, the traditional business workflow and decisions do not normally applied. If there are decisions that need to be made regarding the adoption of an innovation, it is less likely that speedy results can be obtained without conservative hesitation. These can be conceived by reviewing the supports provided by them in Table 1. In business world, management likes to provide quick response to the market. They prefer to approve a large amount of investments at the beginning, then multi tasks can be developed and implemented afterwards. So, completed product can be produced to serve the clients at the earliest time. However, one of the potential risks that they have to take is overestimated or underestimated the budget of the investment. In academic, management always tends to obtain the deliverables first and then give the supports at a latter stage. Advantage for such action is no need to invest a large amount of at first. Instead, the disadvantage is it will take a longer time to achieve the target.

In fact, these are understandable and predictable reactions from an organization like SPACE because educational body may need to seek sponsors or funding for implementing projects. By the way, SOUL is the first and the only R+D project at SPACE, management has no previous experiences in performing support to a R+D project. Therefore, they selected to watch each step carefully to ensure the investment is worthy and meaningful to the Adult Education market in Hong Kong before money is being invested. Therefore, careful concerns are important before major decision is made. In fact, success of the project also lies into the use of suitable project manager. The role of a project manager is the catalyst of success. This person should possess serious participation and involvement, devoted energy, special vision, understanding of adult learner characteristics, familiar and experienced in the adult learning education environment, and

BEST COPY AVAILABLE

mostly importantly the persistence of efforts and positive attitudes are also critical to the entire implementation of project. For this, the senior management has made the wise move by selecting the right person for this project. It definitely drives the project all the way through to remarkable result.

Conclusion

Since the Internet Technology in the E-commerce market is kept changing rapidly, no matter it is a commercial company or an academic organization, it requires lots of management supports to ensure the technology keep abreast to the market as well as the suitability of fitting the manpower. SPACE is a non-government, self-financing, and non-profit making organization. When she is undergoing the Internet Technological revolution, sometime the expected support and response does not come out right away when it is required. Instead, hesitation in providing investment support is found until deliverables are obtained. These are reasonably explainable because the source of investment from an academic body, which is non-profit making, is not comparable to a commercial profit making organization. They can obtain their investments from all sort of means like shareholders, customers, and the public. Therefore, they can make fast actions to produce the product for the market.

Although it is harder to obtain immediate response from the senior management, it is clear that the School does pay lots of efforts to investigate and adopt the latest technology to cater the needs of Adult Learners. The School tried hard to sharpen herself into a better shape with a limited supports and ensure students with the best environment and tools for them to study and achieve their personal development. This is the entire idea to deliver education to the society. SPACE does it in this way and it is important that other academic organizations can do it in the same way in order to enrich the ability of people in our society.

References

Cahoon, B. (1998). Adult learning and the Internet themes and things to come. *New Directions for Adult and Continuing Education*, (No. 78), 71-72.

Cheung, B., Hui, C. K. L., Yim, T., & Yung, W. L. V. (1999). *Security design in an online-education project.* Proceedings of The Fifth Hong Kong Web Symposium, pp.1-14.

Cheung, B., & Yiu, S. M. (1999). *WWW technologies and adult continuing education.* Resources in Education. ERIC: U.S. Department of Education, August 1999.

Cheung, B., Yiu, S. M., & Ho, S. (1998). *A survey on online education.* World Conference on the WWW, Internet & Intranet 1998 (WebNet 98), AACE, Orlando, Florida, USA, November 1998.

Fetterman, D. M. (in press). Ethnography in the virtual classroom. *Practicing Anthropology.*

Gray, D. E. (1999). The Internet in lifelong learning: Liberation or alienation? *International Journal of Lifelong Education, 18*(2), 120.

Hendrikx, K., Duval, E., & Olivie, H. (1995). *Hypermedia for open and flexible learning*. World Conference on Computers in Education VI WCCE'95 Liberating the Learner, Proceedings of the sixth IFIP World Conference on Computers in Education, pp. 350-351.

Hong Kong Government. (1999) *http://www.info.gov.hk/itbb/policy/index.htm*

Schrum, L. (1998). On-Line education: A study of emerging pedagogy *New Directions for Adult and Continuing Education* (No. 78), 55-59.

SPACE Online Universal Learning (SOUL) Web Site. *http://www.soul.hkuspace.org*

SOUL, SPACE. (1998). *Questionnaire to study the general interests of SPACE's students regarding online information*.

Biographical Sketches

Dr. Bruce Cheung has been working at the academic field for more than fifteen years as a Lecturer and Program Director. In recent years, he is also leading the development of an E-commerce project which including the latest Internet technologies such as cryptography. During this period, he has published nine different international papers and book.

Miss Venus Yung has been working in the Information Technology area at both the academic and commercial fields internationally for more than six years. She is actively involved in the Internet research area and produced four different international conference papers. Her academic background is focused on educational technology and management.

Using WebCT to Re-design a Large Lecture Freshman Class

Renée S. Cole
Assistant Professor of Chemistry
Central Missouri State University

John B. Todd
Postdoctoral Fellow
University of Wisconsin-Madison

Edward W. Fedosky
Faculty Assistant
University of Wisconsin-Madison

John W. Moore
W. T. Lippincott Professor of Chemistry
University of Wisconsin-Madison

Abstract

At the University of Wisconsin-Madison, the general chemistry department envisioned a restructuring of their introductory freshman chemistry courses to solve some of the problems of traditional large lecture classes. The chemistry department received a grant from the Pew Course Redevelopment Project to utilize computer and software technology for a large lecture class to improve student learning and use of experimental lab / classroom time. One of the tools being used is WebCT. This presentation will outline how general chemistry is utilizing WebCT to solve some instructional problems in delivering freshman chemistry via traditional large lecture classes.

Background

Introductory chemistry at UW-Madison currently enrolls over 5,000 students per year. A major problem in introductory chemistry is that students come to UW-Madison (and to most other colleges and universities) from a wide variety of educational backgrounds. Some have a strong pre-college experience from an excellent high school; others have an inadequate chemistry background; still others have had no high school chemistry. Many have deficiencies in specific aspects of chemistry. Thus their knowledge and skill levels vary widely. Such a range of preparation means that some need to learn more quickly, while others have a stronger base upon which to build. As the course was traditionally taught, it was difficult to deal with this broad range of student preparation because little individualization of instruction is possible. Except for placing students into different courses on the basis of mathematics test scores, little was done to adapt the university's offerings to students' backgrounds and abilities.

The intended redesigned course has the potential to individualize instruction and thereby address the problem of varying student backgrounds. Students' knowledge can be assessed in much smaller subject-matter chunks and they can be provided with feedback and direction that will allow them to make up for specific deficiencies by means of extra work and effort. The redesigned course also has the potential to help students learn to identify their own deficiencies and do their own remediation, a good habit for lifelong learners to develop early. Another important aspect of the technology-based materials is providing a means by which chemistry can be reviewed by students in subsequent courses and to bring into those materials examples and information from other disciplines that will help students to see the applications of the chemistry they are learning.

The academic problems to be addressed can be summarized as follows:

- inconsistency of student academic foundation in chemistry, which causes many students to have problems in general chemistry;
- inadequate student interaction with learning materials;
- difficulty in tracking multiple student experiences in large classes;
- inability to accommodate different learning styles;
- insufficient (or nonexistent) connections in students' minds between chemistry and the many other disciplines that require chemistry courses.

Course Design

The initial effort in improving the chemistry instruction was the development of interactive, web-based pre-laboratory materials. These materials included images and videos that allow students to become familiar with the laboratory equipment and techniques before they come to the laboratory itself. When the course redesign project was undertaken, the first step was adding pre-lab quizzes using WebCT. This allowed students to quickly determine if they were familiar with the basic concepts and techniques needed to successfully complete the lab. Students are allowed two attempts at each quiz, so they are able to use the online materials to correct deficiencies and then demonstrate their mastery of the material.

We then began work on the construction of a question database and the delivery of online homework. The online homework takes advantage of WebCT's ability to provide specific feedback to students, pointing out errors and directing students to additional resources. We also believe that these questions can be used in subsequent courses as a source of review material. Most questions are multiple-choice with the distracters carefully chosen to reflect common mistakes and misconceptions. Students are given two attempts at each homework assignment and encouraged to use their first attempt early in the week to help them focus their study efforts on the material that presents the most difficulty. They can then submit their second attempt at the end of the week once they have mastered the material. WebCT allows the use of a question database to randomly select a question from a designated subset of questions, so students generally do not receive the same set of questions on their second attempt. However, they do receive similar questions since the database was populated with subsets that consist of several versions of each question.

Tutorials are also being developed to help students master the material. In contrast to examples in the textbook, the tutorials are interactive and help students go through a problem step by step. Students are then asked to complete similar problems on their own, but can access hints and refer to the previous examples. The tutorials also include animations, videos and structures that students can manipulate. In addition, general course information is posted on the web, such as the syllabus, lecture notes and old exams.

Evaluation

As part of our evaluation of the course redesign, we wanted to look at the effect of the online homework on the students' performance in the course. Since students with different abilities often respond differently to instructional innovations, the Group Assessment of Logical Thinking (galt) was administered to the class. Galt scores have been shown to be a reliable predictor of student success in chemistry. (Bunce & Hutchinson, 1993) This resulted in the students being divided into four cohorts: high galt/online, low galt/online, high galt/text-based, and low galt/text-based. We then analyzed student performance on quizzes and exams and conducted interviews with students from each cohort.

Results and Discussion

As is frequently seen in this type of study, there was no significant difference in performance among the different groups. This was not surprising since the only significant difference in approach was in the delivery and grading of the homework. To further complicate the analysis, some students in the text-based groups reported accessing classmates' online homework, and all students in the course had access to online reviews for exams that were constructed using questions from the online homework database.

The information obtained from the student interviews provides considerably more insight into the effects of the course redesign on student learning. In almost all cases, students liked the accessibility and variety of materials available to them. The low galt students in particular were very favorable towards the online homework. When asked how they thought their experiences in the course would have been different if they had been in the other group, the students with online homework responded that they did not think they would have liked text-based homework as well and feared their performance may have suffered. The students with text-based homework responded that they thought they would have liked online homework better and may have performed better in the course. The high galt students did not think their performance would have changed much if they had been in a different section and tended to prefer paper and pencil homework.

The primary reasons cited for a preference for the online homework were the facts that the online homework was graded for accuracy and that feedback was provided. The text-based homework was graded by the TAs for completion, not for accuracy. Students thought that since the online homework was graded for accuracy they would have been more motivated to complete the homework correctly, rather than simply writing down enough to get credit. They also thought that having problems graded immediately and having feedback provided would allow them to identify errors in their conceptual knowledge or approach to working a particular problem, since they would still remember what they were thinking when they were working the problems. They also liked the direction to tutorials, appropriate sections in the book and additional problems provided in the feedback.

Students in all four cohorts were enthusiastic about the inclusion of videos, animations and other visually oriented materials. They liked having a variety of approaches to a topic to solidify their learning and make it easier to remember a subject. They generally thought they remembered things better if they saw something rather than just reading a description about it. Most students interviewed appreciated having a variety of resources available to them to help them learn the material.

Conclusions

By transferring much of the course material to the web and adding visualization tools and interactivity, progress has been made towards enhancing the experience of students in general chemistry. The online homework helps students focus their study efforts and identify deficiencies in their understanding. It also seems to help students make better use of discussion time. TAs reported that students in sections with online homework tended to ask more focused questions and showed a more general understanding than those sections with the text-based homework. The online homework also resulted in a small time savings for the TAs since they no longer had to check homework assignments.

Students responded that they were more engaged with the online tutorials than with simply reading the textbook and reported that they liked the interactivity and visuals. They also liked the self-paced nature of the tutorials and online homework They could watch a video repeatedly until they understood what they needed to while a demonstration in class could only be seen once, or at most twice. The online material also demonstrates some success in addressing different learning styles. Students report that being able to read, see and hear about a topic helps them learn material much better than one method alone.

Reference

Bunce, D. M., & Hutchinson, K. D. (1993). The use of the GALT (Group Assessment of Logical Thinking) as a predictor of academic success in college chemistry. *Journal of Chemical Education*, *70*(3), 183-187.

Biographical Sketches

Renée S. Cole is an assistant professor of chemistry at Central Missouri State University. After completing a Ph.D. in physical chemistry at the University of Oklahoma, she joined John Moore at the University of Wisconsin-Madison as a postdoctoral fellow in chemical education. There she began work on the development and evaluation of web-based materials to supplement the general chemistry courses using WebCT to deliver those materials. She has continued those efforts after joining the faculty at Central Missouri State in January 2000.

Address: Department of Chemistry
Central Missouri State University
Warrensburg, MO 64093
E-mail: rsc8704@cmsu2.cmsu.edu
URL: chem-phys.cmsu.edu/~rcole

Phone: (660 543-8704
Fax: (660) 543-4843

John B. Todd earned his Ph.D. in Biochemistry at Northwestern University. He spent a year as a postdoctoral fellow in Dr. John Moore's Chemical Education group at the University of Wisconsin at Madison. There Dr. Todd developed web-based tutorials in Biomolecules and Thermodynamics for use in the General Chemistry curriculum. Dr. Todd also participated in experiments designed to test the effects of online homework assignments and web tutorials on student learning in General Chemistry. Dr. Todd has just accepted an Assistant Professor position at Bowling Green State University where he intends to continue and expand the development of web-based tutorials on subjects encountered in General Chemistry.

Address: 141 Overman Hall
Department of Chemistry
Bowling Green State University
Bowling Green, OH 43403
E-mail: todd@chem.wisc.edu
URL: www.chem.wisc.edu/~jtodd/port

Ed Fedosky is a faculty assistant at the University of Wisconsin-Madison. Ed Fedosky received his BA and MA degrees from the University of Arkansas-Fayetteville, and has done additional doctoral work at the University of Wisconsin-Madison. He has been on the academic staff at the University of Wisconsin-Madison since 1993, with the Chemistry department since 1996.

Address: Department of Chemistry
University of Wisconsin-Madison
1101 University Avenue
Madison, Wisconsin 53706-1396
E-mail: fedosky@chem.wisc.edu
URL: homepage.mac.com/fedosky
Phone: (608) 263-2838
Fax: (419) 821-9611

John W. Moore is the W. T. Lippincott professor of chemistry at the University of Wisconsin-Madison. He joined the faculty at UW-Madison in 1989 as professor of chemistry, director of the Institute for Chemical Education, and chair of the general chemistry division. He has won several awards for his teaching and directs several major projects in chemical education, some of which include: the *Journal of Chemical Education*, of which he is editor; the New Traditions systemic chemistry curriculum project, one of five national NSF initiatives in curriculum reform; and project SERAPHIM, which has developed a variety of innovative chemical education materials using computers and other technology.

Address: Department of Chemistry
University of Wisconsin-Madison
1101 University Avenue

Madison, Wisconsin 53706-1396
E-mail: jwmoore@chem.wisc.edu
URL: www.chem.wisc.edu/people/faculty/moore.html
Phone: (608) 262-5154
Fax: (608) 265-8094

Helping Faculty Design Effective Online Courses

Gail M. Darden
Coordinator of Course Development
Instructional Services
Eduprise.com

Edrie Greer
Manager and Sr. Instructional Analyst
Instructional Services
Eduprise.com

Supporting faculty as they move to teaching in a totally online environment can be challenging for instructional technology support staff and course developers. In addition to supporting the development of effective courses, they must provide guidance to faculty who are new to the online environment. In fact, this role of guide/mentor is crucial.

Recognizing Faculty Issues

A faculty member's role in the classroom is very different than his/her role in an online environment. Reeves (1996) outlined this role shift as one from:

A deliverer of information → to a facilitator of learning
A lecturer to an entire class → to a guide for small group collaboration
An administrator of tests → to an assessor of student development
A controller/deliverer of content → to a sharer of knowledge creation

Faculty may need to rethink course objectives, restructure course material, as well as learn new technology tools in order to teach effectively online. For many faculty this transition can be a frustrating and difficult one.

Cravener (1998) promotes a psychosocial approach to faculty development programs designed to promote online course delivery. She believes that there must be an awareness of the factors that affect faculty resistance to change. This includes everything from competing demands on time, to anxiety about using new technologies. In addition, faculty are frequently reluctant because such work is not factored into promotion and tenure.

Loucks-Horsley (1996), in a chapter on professional development in science education, describes a Concerns-Based Adoption Model used when dealing with those experiencing change. When working with people experiencing change, the author stresses that it is important to listen to them, answer their questions and be careful not to push them into using new technologies until their concerns have been heard and addressed. Often we are more focused on what the students need than on making faculty feel comfortable. Faculty must feel comfortable with technology before they can begin to be effective as online teachers and facilitators.

Some Common Concerns

It is recognized that support staff cannot address some faculty concerns, such as incentives. There are, however, some fairly common issues and questions raised by faculty about teaching online that can and must be addressed by developers and instructional technology support staff.

These questions may include:

- If I put everything online, and can't lecture, what is my role in the online environment? How do I fit in?
- How can I relate to my students if I can't see them?
- How can I teach without having the spontaneity that exists in my face-to-face class discussions?
- How can I possibly make a lecture into a lesson?

It is important for the course developer to be able to provide some responses to these questions, not only to help the faculty member transition to the online environment, but also in order to design effective online courses.

Effective Online Courses-Simple Starting Points

The focus of this presentation and discussion is to outline ways that course developers and IT support staff can create a comfort level for faculty new to online teaching, while developing online course components that promote learning. Some time will be reserved for group activity using supplied case studies. Examples of effective online courses will be provided.

Some topics for discussion may include:

- How to ask faculty the right questions, and help them to establish a comfort level with new technologies.
- How to use some simple online tools, such as discussion forums, to foster a constructivist, collaborative environment, regardless of subject matter.
- Consideration of the principles of andragogy, that often apply to the student population who take online courses.
- Suggestions to help faculty manage their time and workload as they begin teaching online.
- Common types of situations developers may encounter and how to work around them. Example: A faculty member decides he/she wants to put all available course material online, wants to do everything via email, or has a very large number of hyperlinks he/she wants to include in the course.

Conclusion

Rockwell et.al. (1999) examined incentives and obstacles influencing faculty with regard to teaching at a distance. The obstacles listed most by faculty were those of time requirements, time taken away from research, training requirements, and developing the needed technology skills.

Instructional technology support staff and course developers often find themselves on the "front line" in having to deal with and respond to these concerns. Although they cannot address the larger institutional questions, they can help alleviate some of the anxieties and obstacles faced by faculty. The initial costs of developing an online course are high, but a good course development staff can suggest simple ways to reduce the amount of time faculty spend online, make the time spent more productive, and provide some simple training in using online tools. This kind of support is appreciated by faculty, and helps to make their first online learning experience more rewarding.

References

Cravener, P. (1998). A psychosocial systems approach to faculty development programs. *Technology Source [On-line]*. Available: http://horizon.unc.edu/TS/development/1998-11.asp

Loucks-Horsley, S. (1996). The Concerns Based Adoption Model (CBAM): A model for change in individuals. In: R. Bybee (Ed.) Pprofessional development for science education: A critical and immediate challenge, in national standards and the science curriculum [On-line]. Available: http://www.nas.edu/rise/backg4a.htm

Reeves, T. C. (1998). *High quality distance learning for health professionals: Criteria for design and evaluation.* Presentation at the School of Public Health, Univ. of North Carolina, Chapel Hill, NC.

Rockwell, S. K., Schauer, J., Fritz, S.M., Marx, D.B. (1999). Incentives and obstacles influencing higher education faculty and administrators to teach via distance. *Online Journal of Distance Learning Administration* [On-line], Available: http://www.westga.edu/~distance/rockwell24.html

Biographical Sketches

Gail M. Darden is an instructional designer and the Coordinator of Course Development at Eduprise. In addition to developing courses she also consults with faculty on course design and online pedagogy issues. Gail received a M.Ed. in educational media and instructional design from the University of North Carolina at Chapel Hill. Previous to joining Eduprise she was employed at the University of North Carolina at Chapel Hill. She worked with faculty at the School of Pharmacy to develop an Internet course prototype, after which she joined the Center for Instructional Technology at UNC where she provided training and consulting for faculty interested in using Internet tools in teaching.

Address: 2000 Perimeter Park Drive, Suite 160

Morrisville, NC 27560
E-mail: gdarden@eduprise.com
URL: http://www.eduprise.com
Phone: (919) 376-3445
Fax: (919) 462-6450

Dr. Edrie Greer is Manager and Instructional Consultant for the Instructional Services division of Eduprise, which provides course management system training, custom online course development and other integrated services for e-learning clients in higher education and business. She is also a visiting lecturer for the East Carolina University School of Education's Broadcasting, Librarianship and Educational Technology department, where she developed and taught courses and workshops online and via 2-way interactive TV. Previously, Edrie coordinated distance learning programs and faculty development for the of Continuing Studies at East Carolina University, and was a Distance Learning Specialist and Producer-Writer for the University of Wisconsin-Extension and Wisconsin Public Television and Radio, where she produced educational video and satellite videoconference programs. She has been working in the field of distance education for more than 16 years. Edrie holds a bachelor's degree in Natural Science Journalism and a master's degree in Continuing and Adult Education from the University of Wisconsin-Madison and a doctorate in Philosophy from the New Thought Theological Seminary.

Address: 2000 Perimeter Park Drive, Suite 160
Morrisville, NC 27560
E-mail: egreer@eduprise.com
URL: http://www.eduprise.com
Phone: (919) 376.3431
Fax: (919) 462-6450

National Guard Bureau Distributive Training Technology Project: Promoting Distributed Learning "Anytime, Anywhere"

Dennis P. Donovan, LTC, GS
Product Manager
Distributive Training Technology Project

Background

In 1994, the US Chamber of Commerce and the Defense Advanced Projects Research Agency (DARPA), launched an initiative to enable a "culture of competence" across the nation through the technology preparedness of the US workforce. This initiative created a concept focused around two imperatives: 1) the integration of all communities into the most accessible distribution network for delivery of the best education, training, and information resources available; and 2) an infrastructure that would be partially offset through the shared use of its assets. The foundation of this concept serves to support military readiness requirements; but through active promotion and innovative business concepts, this initiative would also serve as a critical resource to federal and state government agencies, businesses, industry, and academia. In so doing, the cost of operation would be absorbed by all users over time, eliminating duplication of effort while providing a continuous, self-supporting funding system.

The original concept became the catalyst for Congress to designate the Chief of the National Guard Bureau as the Executive Agent to develop and implement the Distance Learning Network, later renamed the Distributive Training Technology Project (DTTP). Congressional appropriations in the amount of $7.5M were provided to the National Guard for a regional, nine-site distance learning prototype, located in Pennsylvania, Maryland, Virginia, and West Virginia. Today, the project, which has grown to an aggregate value of over $260M, has 154 multi-media classrooms and a leased, national communications backbone in place to support distance learning in all 50 states, territories, and the District of Columbia. Under current plans and with favorable funding, approximately 453 classrooms will be in place by 2003. The DTTP supports enhanced military readiness, improved command, control, communications and computers (C4), and provides opportunities for enhanced connectivity to non-military users throughout the country through shared use.

Mission: Readiness

The National Guard Bureau is committed to achieving its primary missions of military readiness, rapid response to federal and state needs, and support to peacekeeping operations by leveraging the best instructional methodologies, information systems, and communications technologies to deliver education, training, and performance-enhancing tools.

However, the Total Army's in-force structure changes have precipitated a major change in the National Guard, placing a heavy burden on retraining soldiers from one military specialty to another. Budget constraints and fiscal responsibility mean that the National Guard cannot afford such retraining through the traditional practice of sending soldiers to distant classrooms. The

DTTP gives significant opportunity to the Guard to maintain the required readiness and offset the cost of the program. The advantages are clear:

- More soldiers can be trained at the same time, lowering the cost of instructors and transportation;
- It reduces the amount of time it takes to deliver requisite training to multiple large groups; and
- It broadens the scope of education, making more information available to more people at the same time.

Mission: Shared Use

One of the congressional goals for the National Guard is to explore the feasibility of public-private partnerships through "shared use." The National Guard is the only agency utilizing this business concept in conjunction with DL capabilities. "Shared use" involves the use of the National Guard's classroom and network resources on a cost reimbursable basis with organizations in the public and private sectors.

Through "shared use," DTTP partners have access to state-of-the-art training facilities, technology and network resources. Current DTTP partners include organizations like, Big Brothers/Big Sisters, the Naval Air Warfare Command, Training Systems Doctrine, Joint Forces Command, US Patent and Trademark Office and Carnegie-Melon University. Through the use of the DTTP classrooms and network, these organizations are providing critical training and professional development resources to their employees and participants.

The DTTP genesis and application has a broad benefit to the American people. As a nation, we are under great pressure to keep pace with our global competitors in the technological workplace. The DTTP provides a mechanism through which, businesses, schools, professional practices and the community-at-large can gain access to the information and devices that are changing our educational perspectives. The innovative approach of reaching outside the government for distributed learning resources is a best practice the program will continue to expound upon as its outreach grows. The program serves as a catalyst in transforming the nation into a populace of life-long educated, informed and involved citizens.

Mission: Improving C4

The DTTP has been configured to meet the initial requirements of both the National Guard Bureau and shared use customers and to be able to rapidly expand to meet the ever-growing needs of distributed learning. In addition to the wide area network (WAN) communication networks, each state has a State Area Command (STARC) node to provide focus for all communications within the state and between state and federal authorities, including the NGB.

Technology and Courseware

Each of the DTTP Multimedia Scaleable classrooms include up to 44 computers and capabilities ranging from simple audio conferencing to two-way video and audio conferencing; and from single stand alone computer-based training to interactive Web-based training.

The network backbone, GuardNet XXI, has seven primary hubs located across the 48 contiguous states and a network operations center located in Arlington, VA. In addition, there are 47 subordinate nodes completing the connection to all states, territories, and the District of Columbia. Each node has two state-of-the-art ATM (Asynchronous Transfer Mode) switches. The system is designed to be cost-efficient, reliable, expandable, and able to simultaneously support voice, video, and data transmission. In addition to supporting DTTP, GuardNet XXI is also utilized by other projects including the Virtual Emergency Response Training Simulator (VERTS) and Reserve Component Automation System (RCAS).

The majority of military courseware is provided by Training and Doctrine Command (TRADOC). Additional courseware is being created by the Guard's Professional Education Center (PEC) and the Army Reserve Readiness & Training Center (ARRTC). Non-military courseware is being acquired and made available on a cost reimbursable basis to limit capital investment in products with short lifecycles while ensuring that current versions are available on all software products.

Moving Forward Into the 21st Century

Challenges facing the National Guard Bureau in the 1990s made the DL solution a very desirable option. As the National Guard supports the transformation of the Army and Air Force, hurdles remain. First, training requirements have increased dramatically as a result of changes in roles and missions. Second, there are limited seats available in schoolhouses for "in-residence" training. Third, trends suggest that budgets for training might not increase to meet additional requirements. Finally, competing demands for time from soldiers and airmen who are already full-time professionals outside the Guard place severe limitations on when and for how long National Guard personnel could attend training without jeopardizing their civilian careers. This last factor alone continues to be one of the greatest challenges to retaining trained personnel in the National Guard.

In an era of increasingly advanced technology, decreased training budgets and increased training requirements, it is essential that the National Guard leverage every available resource available through distributed learning in order to implement the vision of the Chief of Staff of the Army, GEN Shinseki, to "*. . . continue to attract, train, motivate, and retain the most competent and dedicated people in the Nation . . . by investing in today's off-the-shelf technology to stimulate the development of doctrine, organizational design, and leader training even as we begin the search for new technologies for the objective force.*"

Biographical Sketch

LTC Dennis P. Donovan graduated from the United States Military Academy and was commissioned as a Second Lieutenant of Armor in June 1978. He has served in divisional units in Europe, Korea and Alaska. He has held a variety of acquisition positions including Test and

Evaluation Officer for the Bradley Fighting Vehicle, Force Development Test & Evaluation and the M1E1 Operational Test II; and Chief of Training, All Source Analysis Project Management Office. In 1992 LTC Donovan left active duty and became a member of the Alaska Army National Guard where he served as the Director of Information Management. He returned to Active Guard/Reserve status in 1998 serving as a Project Officer at National Guard Bureau. In 1998, he assumed duties as Project Manager, Distributed Training Technology Project. LTC Donovan's education includes completion of Director of Information Management Course, the Defense Systems Management College Program Managers Course, and a Masters of Engineering Administration from George Washington University. Recently, LTC Donovan has been a presenter at TeleCon East 2000, DoD Education Symposium 2000, and TechLearn 1999.

Address: National Guard Bureau
1411 Jefferson Davis Highway
Arlington, VA 22202-323
Phone: (703) 601-0588
Fax: (703) 339-9492
E-mail: Edonovandp@pmorcas-arng.ngb.army.mil
URL: www.arng.ngb.army.mil/dttp/html

Supporting and Hosting Web-Based Learning Systems in the University of Wisconsin System

Charlene Douglas
Director, dot.edu
University of Wisconsin System

Economy of Scale

The University of Wisconsin System (UWS) consists of 27 individual campuses: two research institutions, eleven 4-year universities, thirteen 2-year colleges, and an extension. Several years ago UWS found itself inundated with requests from these individual campuses for financial assistance for the following.

- Web-enhanced and web-based learning
- Enhancement of their respective libraries
- Expanded curricular redesign efforts

Since it was not possible for UWS to support such endeavors on each campus and since such funding would basically re-invent the wheel 27 different times, UWS decided to implement a Distributed Learning System Environment. The philosophical assumption behind this type of environment is that the 27 campuses of UWS could receive a much greater return on investment if they collectively take responsibility for infrastructure investments (with infrastructure being defined as a base that is universally accessible, potentially used by all and has value in its commonality).

The University of Wisconsin System has attempted to establish a well-defined set of support services for internet-based teaching and learning for its 27 campuses. The objectives of these services are: 1) to provide all University of Wisconsin (UW) campuses with the opportunity to use distributed learning technologies to enhance teaching and learning, 2) to guarantee a learning and teaching system infrastructure (including software, hardware, and staffing) that enables on-campus and off-campus network-based courseware, and 3) to provide a longer term funding model that will ensure core distributed learning services for all faculty and teaching staff.

UWSs Distributed Learning System Environment includes such services as the following:

- Instructional Design, Course Development and Faculty Support
- Copyright Clearance Center
- Video Production and Digital Television
- Asynchronous Library Services
- Network Services
- Student Support Services
- Statewide Distance Education Communication, Coordination, Support, and Web Maintenance
- Web-Based Learning System (WBLS) Hosting, Help Desk, Training, and Support

It is the last service on which this presentation will focus. UWS sent out RFPs to all 27 campuses to provide this service. The successful campuses were the University of Wisconsin - Eau Claire which focuses on LearningSpace, the University of Wisconsin - Madison which focuses on WebCT, and the University of Wisconsin - Milwaukee (dot.edu) which focuses on Web Course in a Box and Blackboard. Therefore, instead of providing this service at each UW campus, the Web-Based Learning Systems provide this support from these three central locations for all UW campuses in a much more cost-effective fashion.

Web-Based Learning Systems (WBLS)

Services

For whichever of the products chosen, the following services are provided:

- Hardware: server access, disk space as necessary
- Software: for course development (license, vendor support, upgrades, renewals, separate instance); for course delivery to students
- Staffing: professional development; instructional workshops in the use of the software; accessible and sustained support to institutions, educators, and students; instructional design consultation; 24X7 help desk (toll free number) for faculty and students; Network and System Administrators

Thus, WBLSs provide faculty and teaching academic staff throughout UWS a choice of four web-based learning tools for course presentation.

Faculty Benefits

The faculty using these tools report many benefits: versatile courseware, time for active learning, online courses that can mirror classwork, problem solving activities, and collaboration. These tools vary in ease of use and make it possible for faculty to create meaningful courses that range from the very basic to the highly interactive, from web-enhanced to distance education.

Student Benefits

Student benefits are numerous. Web-based and web-enhanced learning provides a consistent look and feel to course information and resources; provides anytime, anyplace, any pace instruction (most beneficial to non-traditional students); allows students to continue the conversation beyond the traditional classroom's constraints of time and space through collaborative tools such as discussion forums and virtual chats. Students now have the ability to begin the process of becoming lifelong learners.

dot.edu: Web-Based Learning System at UW - Milwaukee

The impact of dot.edu has been tremendous: we have 2658 courses in some phase of development, 2148 faculty have been trained, and 30,185 students are enrolled in these courses. We are in both UW-System research institutions, 9 of the eleven 4-year UW-System universities, all thirteen 2-year UW-System colleges, and UW-Extension. We have 8 non UW-System partners who pay to use this service and 12 very strong potential partners (including M&I Data Systems). Our non UW-System partners include such institutions as CESA #1, the Milwaukee Public School System (most active in Burdick Middle School, Riverside University High School, and North Division High School), the Archdiocese of Milwaukee, Mt. Mary College, St. Francis Seminary, Marshall Public Schools, and the Milwaukee Teachers Education Center.

This involves 12 different servers; a video server; 12 copies of the software that experience upgrades twice a year; a tremendous amount of travel, coordination, collaboration, strategic partnerships and, at present, a budget of $750,000 ($550,000 for WBLS and $200,000 for initial Blackboard, Level Three roll out). We will be moving from the Course Management version of the software (Level One) to the entire campus solution (Level Three) starting with the University of Wisconsin - Milwaukee and moving to other campuses within the UW-System over the next couple of years. This is a multi-million dollar project and will take tremendous effort, collaboration, and cooperation to accomplish. Dot.edu will be in charge of this project along with the I&MT department of the University of Wisconsin - Milwaukee.

dot.edu Partnership Model

Process

The partners of dot.edu include all faculty, teaching academic staff, and administrators in the following categories:

- The UW System campuses
- Wisconsin public and private higher education institutions
- Wisconsin public and private schools and districts as well as education agencies in the state
- Non-educational institutions and those institutions outside the State of Wisconsin

Programs can be selected and uniquely organized to meet the needs of the particular partner. The Utility model is structured as a 3-stage implementation plan that eventually transfers responsibility for course development instruction from dot.edu to the partners.

Stage 1: dot.edu provides direct instruction and support to the on-site trainers

Stage 2: dot.edu provides direct instruction and support to first set of instructors, with support from on-site trainers

Stage 3: On-site trainers provide all direct instruction and support to subsequent sets of instructors, with support from dot.edu.

The course development instructional program design and implementation timeline are determined by the needs of the institution. A written implementation plan is designed jointly by dot.edu and the respective institution. It is developed with the flexibility necessary to meet changing needs. The campus eventually sustains the course development instruction.

Pricing

Pricing includes a $20,000 set up fee (includes separate server, initial software license, renewals, upgrades, training, support) and $1000/month thereafter (unlimited space for course creation - for one course up to an unlimited number of courses). Twelve hours of training are included for dot.edu partners. Once the required workshops are completed, any remaining hours may be used for Electives. Electives completed in excess of these twelve hours will incur a charge of $125/hour plus travel expenses. For those partners not wishing to have their own instance, partners are billed each semester/calendar year for every course section created. Fees are assessed when either dot.edu or partner site administrators create a course, recycle a course, or maintain a course in production. The per course pricing is: $325 when offered to students on a semester basis; $500 when offered to students on an annual basis. For accounts that do not wish to utilize the hosting service, dot.edu provides Course Development Instruction at a rate of $125/hour plus travel expenses. UWS currently pays for the UW-System 27 campuses so that each campus does not have to budget for these services - therefore, these services are provided, sponsored, and funded centrally.

Future

The future of the Web-Based Learning Systems, especially dot.edu, is not stagnant but ever changing.

- We will be partnering with the Student Accessibility Center at UW-Milwaukee to accompany us on all our training sessions to educate all faculty and students with regard to accessibility issues
- We will be instrumental in the formation of standards through the Wisconsin Co-Lab,
- Very major upgrades to the software, video server enhancements, and an alignment with the statewide educational service provider, WISCNET will occur
- Strategic partnerships are being developed on each campus, throughout the UW-System, with various software and hardware vendors (Blackboard, Sun, Oracle, PeopleSoft, DataTel, Microsoft), and the private sector

What We Have Learned and Reasons We've Succeeded

Lessons Learned

Much has been learned in the process of developing these Web-Based Learning Systems. Since nothing like this existed, we are constantly "making it up" as we go along. Continual refinement of policies and procedures, pricing structures, service agreements, and services offered takes place. Some of the specific lessons we've learned follow.

1. Identity issues - each of the Web-Based Learning Systems exist on a specific central UW campus but each is funded and sponsored by the University of Wisconsin System
2. Customer support - this is a very intense and expensive aspect of the Web-Based Learning Systems, much more than anticipated at the beginning
3. Dealing with unknowns on each campus - this comes into play when the training takes place on our partners' respective campuses
4. New products - since this is such a changing, volatile field at present, new products are continually being analyzed and tested
5. Legalities - copyright and intellectual property issues
6. Instructional design - it is quite a challenge to provide instructional design and pedagogical consultation through a distributed system
7. Measuring capacity and demand - regarding disk space, number and types of servers, personnel needed
8. Students - staffing has to be supplemented by student workers
9. External funding - it is imperative that partnerships are developed and external funding is sought
10. Administrative systems - it is becoming more and more apparent that it is absolutely necessary that the Web-Based Learning Systems integrate with individual campus Administrative back-office systems

Why We've Been A Success

The Web-Based Learning Systems (especially dot.edu) have been a tremendous success because of a few very simple reasons.

- Customer service - fast, friendly, and thorough
- A great product which is continually being improved and enhanced
- A buy-in by central administration, campus administration, and faculty
- Having as an end product of all of this - true collaboration and teamwork throughout the State of Wisconsin
- A willingness to go that extra mile
- An adherence to the mission of the Web-Based Learning Systems
- A willingness to take the risk and go where no one has gone before

Conclusion

Several years ago the UW-System had the foresight to see that a problem existed and they designed a solution. They then had the tenacity to actually try their solution. Its success has exceeded everyone's greatest expectations. Through the Web-Based Learning Systems and the entire Distributed Learning System Environment, the UWS faculty and campuses can now take education in the State of Wisconsin to that next level.

Biographical Sketch

Charlene Douglas has been involved in educational technology for over 10 years. She completely computerized the department she ran at Washington State University and has been involved with technology her entire career at the University of Wisconsin - Milwaukee. Her experience ranges from creating a relational database for the School of Nursing, to teaching faculty and staff how to utilize all types of instructional technology in their classrooms through the Learning Technology Center, to designing accounting systems for entire departments, to being the Director of dot.edu. Her Ed.D. is in Educational Psychology and she has given numerous presentations at conferences, conducted radio and TV interviews, and, in addition to the above, utilizes the web for online bereavement counseling.

Address: University of Wisconsin - Milwaukee
P.O. Box 604
Milwaukee, WI 53201
E-mail: douglasc@uwm.edu
URL: http://www.uwm.edu/Dept/dotedu
Phone: (414) 229-5066
Fax: (414) 229-6758

Creating Successful Online Discussions

William A. Draves, President
Learning Resources Network (LERN)

The following is an excerpt from a forthcoming book *Learning Online* by William A. Draves.

In the old traditional classroom or in-person course, questions and comments and interaction were nice, but not required. And too many questions interfered with the lecture. And too many comments and you dominated the discussion.

So if you did not make comments during a class or ask a question, that wasn't bad. Sometimes that was good.

Online, of course, everything is different. Participating in your online discussions is not just good or helpful or positive to learning. Participating in your online discussions is critical. It is essential. It is a must.

No comment, you're not there.

Radio humorist Michael Feldman warms up his live studio audience by asking a question. Invariably, about half of the audience respond to his question by raising their hands. To which Feldman then instructs his audience that no one listening to his program can see them raising their hands. After that, everyone applauds in response.

Online, you're not there if you don't make a comment. Of course your teacher can track your presence online. But we're talking about your learning presence, not your virtual presence.

Why Most People Don't Make Comments

My early research on learning online indicates that about 30-35% of online learners will make comments in an online course. This is for a voluntary situation where comments are not required, only sought.

Then there's about 50% of online participants who are active in logging on and reading others' comments, but do not make comments of their own. These are sometimes called "lurkers," but I prefer the term "Silent Majority."

And then there are about 15-20% of learners who aren't there, have dropped out, cannot attend regularly, or are avoiding the online class for some reason. These are the folks who would be sitting in the back of the room if it was a traditional classroom set up. They don't want to be there.

What is interesting to me is that the percentage of people making comments online: 30-35%, is exactly the same range as for people making comments in an in-person class or discussion.

The next time you are in an in-person discussion with about 20-30 people, and it is a good discussion, count the number of people who are actually making comments. It will be about 6 to 8 people in a good discussion. About a third. Everyone else will be listening attentively. Everyone will agree it is a good discussion. But only about a third of people will be actually making comments.

This is because it is physically possible for only about one-third of people in that size group, the traditional class size, to make comments. There is simply not enough time in a typical one hour class for everyone to make comments.

In fact, if everyone did want to make one or more comments, the discussion would not work. It would take too long, or be too chaotic, or go in too many different directions.

What I conclude is that most of us— half of us roughly— have been "taught" not to make comments. We have been expected to listen, and so we listen well. In order for discussions to work for the entire group, about half of us have had to step aside and be the silent type.

After a few years, we conclude that we enjoy being the silent type. Or that it matches our "learning style." That it is you and me. But it is really the environment and the situation.

Online, the environment calls for everyone to be involved in making a comment. Because everyone can make a comment. Because making a comment is required in order to get clarification, communication, and of course learning to occur.

So I am asking you, begging you, pleading with you to learn how to make comments online. Because it is critical to your learning.

We Learn From Ourselves

We know we each learn from other. And the teacher of course. But we also learn from ourselves. The next time you are in a discussion, think about it afterwards. Try to remember what you said. Most people can remember what they said. Then try to remember what others said. You will remember more about what you said than about what others said.

We learn from ourselves. By making a comment online, you will be learning from yourself.

Group Learning

Then there is group learning. This is when a discussion builds and a number of different people contribute to the discussion, and all of a sudden, a new idea, concept or thought emerges. No one person came up with the new idea. No one person could have come up with the new idea. Yet, there it is. It emerged, it was created, by the combined energies and thoughts of everyone participating in the discussion.

Your comment, even one encouraging the discussion or agreeing, or rephrasing someone else's comment, contributes to group learning. And every once in awhile, a new idea will emerge that will excite and amaze everyone. You will have done your part in making that new idea.

Kinds of Online Comments

There are many different kinds of comments you can make online. Your comment does not have to be brilliant, original, or brilliantly original.

Original comments. These are statements that are, or appear, to be original with the person making the comment. We usually think of these kinds of comments as being the only valid comments in a discussion, but in fact only a small proportion of comments need to be original in a good online dialogue.

Additions comments. These are statements that modify, expand upon, or add to an original comment.

How to Respond to Others

Feel free to respond to comments that other people in your course make. In fact, I encourage you to respond to a comment made by someone else, especially if no one else has responded. When you respond to a comment, you keep the discussion going. You are supporting your fellow learners. And they will be more apt to respond when you make a comment. The only thing worse for someone making a comment than a bad response is no response at all.

So when there's an 'original' comment made (you do not need to respond to responses) and no else responds to it, do your part and write a response.

Follow Draves' Rules for Online Discussion in writing a response. Be positive, be neutral, but don't be negative. There are several different kinds of responses you can make. Here are some of them.

Supportive comments. You don't have to respond to a comment with another great idea. It is helpful and positive just to make a supportive comment. You could write:
"Great idea, John." "Very nicely worded comment, Charlene." "Ramon, thanks for making that contribution."

In making your 'supportive' comment, you do not have to agree with the substance of the comment. Here are some neutral supporting comments:

"Very interesting point of view, Carlos." "I had not thought of that, Cem." "I wonder what other people think about that, Tho."

Supportive comments are very important in online discussions. And anyone can make them. If you don't have a particular insight, opinion, question or 'original' comment to make, you can and should contribute by making a supportive comment. It really does encourage others and keeps the dialogue going.

Connecting comments. Now these are really great comments. You get an A+ from me for making a connecting comment. A connecting comment ties together two comments that were made at different times. That is, the two comments aren't right next to each other.

Here's an example: "Interesting thought, Isabella. Your idea might also relate to what Thomas was talking about yesterday when he said . . ."

You tie together two (or more) comments that are made at different times and often made about different points or topics. When you do that, you create a whole new perspective, idea or insight. Nice job. You can do it. So when you are reading comments and another comment made previously comes to mind, try making a connecting comment. It is fun and interesting and great learning. And the folks who made the two comments will be pleased too.

Responses. This is when you respond to an "original" comment by adding to it, making another "original" comment, or politely disagreeing with the first comment. Keep your thoughts positive. Make only one to two points in your response. Speak to the idea, not the person or the way it was said.

Follow-up questions. This is where you ask the person making the 'original' comment to clarify, expand, or rephrase their statement. This is a great technique. Some examples:
"Could you tell us more about that, Chuck?" "How would you do that, Lisa?"

Biographical Sketch

William A. Draves, CAE, is President of the Learning Resources Network (LERN), and a consultant, author and speaker. He is one of the foremost authorities in the world on teaching online, the Internet and marketing distance learning. He did his graduate work in adult education at The George Washington University in Washington, DC. Draves has taught for over thirty years, including teaching at the graduate level. He is the author of *Energizing the Learning Environment* and *How to Teach Adults*, the most widely read book on adult learning. His new book is entitled *Teaching Online* and he is currently working on another book *Learning Online*.

Address: Learning Resources Network (LERN)
PO Box 9
River Falls, WI 54022
E-mail: Draves@lern.org
URL: www.lern.org
Phone: 800-678-5376
Fax: 888-234-8633

Strategies, Protocols, and Policies for Student Management in Online Courses

Robert A. Fleck, Jr.
Distinguished Professor of Information Systems Management
Abbott Turner College of Business

Tena McQueen
Associate Professor of Computer Science
Columbus State University
Columbus, GA 31907

Introduction

The authors have taught a number of distance-learning courses via the Internet. The most challenging was the introductory computer skills course that covered Microsoft Office 97, browser software, e-mail, and information retrieval concepts. The introductory skills course required the authors to codify many of the procedures assumed by those teaching more advanced courses and courses that could assume computer literacy. The process of codification required the authors to review the literature, discuss concepts with other faculty, staff and administrators, and more importantly to question the assumptions on which we had based the delivery of other Web supported and delivered courses. Many lessons were learned from those experiences and dialogs.

One of the most difficult issues in developing a computer skills class was not the delivery of content, but the management of student performance and participation. The formalized strategies, protocols, and policies developed by the authors and summarized in this paper to address these issues have been adopted by other faculty with some success. The course portal can be found at: http://atcob.colstate.edu/CISM2105/index.html

Enrollment Management

First Come-First Served?

A beginning-level course in computer skills is usually taken by freshmen who need the class as a prerequisite for other classes. At many institutions, freshman have priority in the registration process to assure that they are able to enter required courses. Hence, those with the least computer ability register for courses first. Since we could not control the process, many students enrolled in the course because they valued time flexibility over course content. These students were often ill prepared for the rigor and self-discipline required in an Internet-delivered course. ***Lesson:*** Determine the appropriate background for students enrolling in the course and when possible, limit enrollment to those students.

Assessing Student Readiness for Online Courses

The course schedule (booklet and Web version) listed a URL for a course portal. The schedule booklet specified that a potential student should visit this portal within the first calendar week of the semester. In addition, the policies that we developed for our specific course were summarized (Figure 1) and printed in the schedule book.

We could not require that students visit the course portal, but we did expect that those considering enrolling in the course would visit the portal. We also had some expectation that faculty advisors would visit the site before recommending enrollment.

Our course portal also provided links to self-assessment sites and provided guidelines to assist a student in determining the appropriateness of the course. Printed materials (Figure 1) also contained cautions. Many students who enrolled in the course did not read the directions, and none (based on student self-reporting) took the self-assessment exams. Similarly, faculty advisors did not control entry to the course based on the materials supplied by the authors.
Lesson: If the course being offered is the first Web course that a student will take, admission to the course must be contingent on the student demonstrating that she or he has taken the self-assessment exam.

Planning to enroll in an Internet course?

Review these requirements first.

Internet students must
- Review the course Web site for specific course information including course dates and technology requirements.
- Contact the instructor no later than the fifth day after the first official day of the semester.
- Attend scheduled on-campus meetings, when required.
- Arrange for an exam proctor, if needed.

Internet students must have
- A connection to the Internet via an Internet Service Provided. (CSU does not provide dial-in services.)
- Appropriate computer hardware.
- Course required software.
- Rudimentary computer skills.
- Electronic communication capability (e-mail) and skills

Registration for an Internet course follows the same registration and withdrawal schedule as for traditional classes.

Figure 1

Course Portal Contents

Development

From the beginning, we realized that we would have to communicate with students in very specific terms. Our first step was an attempt to create a single paragraph of conditions and caveats that could conveyed to students before enrollment. As we developed the paragraph and sought advice from colleagues, the paragraph expanded to a page and then a Web site. A shorter version (Figure 1) was adopted by the University and appeared in the printed schedule
Lesson: Assure that all stakeholders in the development of the course participate in the discussion of delivery policies and procedures. Do not assume that content if available from another source will be as promised or easily installed by computer center personnel.

Content

The course used textbooks and WebCT content provided by Prentice-Hall. The course portal was designed to help students succeed in the use of that content. The portal was divided into the following sections:

- CISM 2105 Asynchronous (course overview and links to self-assessment tools),
- Basic Computer Skills (summary of required computer skills),
- WebCT Access (accessing the course and an overview of testing and participation),
- Computer Hardware (minimum hardware requirements),
- Instructors and Communication (how to contact instructors; cautions about e-mail; instructor availability),
- Internet Access (student responsibilities for connections),
- Software (versions and browsers required),
- Working from Home (firewalls and related issues),
- Textbooks and Exams (textbook list and proctors), and a
- Directory of Related Links (textbook, CSU, Disability Services).

Lesson: Spend time and effort on assuring the functionality and usability of the course. Buy or adopt content when available rather than developing it independently. Assure that content can be modified to meet specific course objectives.

Participation Guidelines

Our course used both asynchronous bulletin boards and synchronous chat rooms. At the start of the course, we required all students to participate in the chat areas as a way of developing a learning community. To encourage all to participate, we asked questions of specific students. Also, one of the instructors signed on in student-mode and asked questions. The tone we used in responding to these pseudo questions set the tone for later discussions. The portal site provides guidelines on how to interrupt a discussion.
Lesson: First courses will require more initial contact with students to get them to both participate and to communicate with each other. Instructors must be prepared to spend time in

synchronous chats to encourage students. Do include participation as a part of the grade in first courses and be sure to explain how participation is measured and evaluated.

Managing Student Demand for Instructor Time: Are You Always Available?

Setting a Response Time

Our participation in other online courses taught us that we had to train students how to interact electronically with faculty. The primary issue was how long a student might expect to wait for a response from us. For example, an instructor will be online performing non-course activities and notice an inquiry from a student. The temptation is to respond immediately. Such rapid responses encourage expectations for future response rates. If a faculty member succumbs to such expectations, she or he can expect phone calls when postings or e-mail are left unanswered for more than two hours. We set a policy of a maximum response time of two business days.
Lesson: Students and faculty do not keep the same work schedules. Rapid responses encourage last-minute inquiries before exams and project due dates. Set a reasonable response time and adhere to it.

Hardware and Software Requirements

Some students have the expectation that the institution should be responsible for providing the required software. Others believe that the instructors or computer center would trouble shoot hardware, software, ISP, and related issues. One student expected the faculty member to make "house calls to resolve hardware issues.
Lesson: Make sure that course policies clearly state services that will and will not be provided. Clearly state minimum hardware and software requirements. Include a policy on viruses. In most classes we will not accept or clean files that contain a virus.

External Validation

Procedures for teaching online courses continue to mature. Other faculty may view those who teach online or Web-supported courses with admiration or skepticism. Skepticism may be caused by the apparent lack of student contact and reduced or eliminated traditional student "seat-time." For that reason some online courses may be viewed as less than rigorous.

We carefully selected textbooks and other materials that supported MOUS (Microsoft Office User Specialist) testing. MOUS testing provides external validation of course content and rigor.
Lesson: Assure wherever possible that content and testing have external validity. External validity can be obtained by peer review of content, use of the same exams as those used in traditional courses, or by tying exams or other assessment tools to external certification requirements.

Record Maintenance

Online students have less direct contact with faculty than do students in traditional courses. It is therefore imperative that course procedures include rapid feedback and opportunities for self-assessment.

Lesson: Assure that course content and structure support numerous self-assessment exercises, that projects are graded rapidly, and that student performance measures are available online.

Student Retention

Student retention in online courses will usually be less than that experienced in traditional courses. In addition, enrollment will "churn" substantially during the first week of classes as students decide that an online course is not appropriate for them. Further, students who lack the self-discipline will postpone work in online courses.

Lesson: An instructor must monitor student progress on a regular basis. Include numerous self-assessment tools, specify completion dates for readings and self-assessment quizzes, and build tracking software procedures into the course structure. For example, WebCT supports student tracking and a query can be run to identify potential problem students. Individualized messages can then be sent to those in difficulty, encouraging renewed effort.

Conclusions and Recommendations

Delivering online or Web-supported courses requires non-traditional approaches. Teaching a course on computer skills via the Internet required us to rethink many of the assumptions that we had concerning Web delivery. The re-evaluation led to the development of policies and strategies that have assisted us and other faculty manage online courses. Policies and procedures must be developed by involving large contingent of campus stakeholders not usually involved in the delivery of a traditional course.

Biographical Sketches

Bob Fleck is Distinguished Professor of Information Systems Management at Columbus State University. He received his Ph.D. and MBA from the University of Illinois and his baccalaureate degree is in Chemistry from Ripon College. He has held positions including Research Programmer, Department Chair, Dean, and Vice Chancellor for Academic Affairs. He teaches database management, networking, decision support, and other information management classes at the graduate and undergraduate level. In 1999, Bob was recognized as the outstanding teacher in the Abbott Turner College of Business and is Columbus State's nominee for the Regent's Excellence in Teaching award for 2000. At CSU, Bob has developed a number of Web-supported and several Web-delivered courses. Bob has over 100 publications and three texts relating to information systems. He often consults with region firms on information-related issues. Projects have included Web design, systems design, network management, and management training.

Address:
E-mail: fleck_bob@colstate.edu
Phone: (706) 562-1657
Fax: (706) 568.2184

Tena McQueen is an Associate Professor in the Department of Computer Science. In addition to over 30 years of teaching experience in higher education, she is involved in teaching courses delivered via the Internet. Her main area of interest is in computer applications skills. She has several recent publications and presentations on the topic of developing and delivering university-level Web based courses. These publications and presentations have addressed issues ranging from College and University Web Policies to Web Course Creation on a Budget. Her work has appeared in *First Monday* and *Educause*. Conference presentations include: Georgia Conference on College and University Teaching 1999 and 2000, ACM Mid-Southeast Conference 1998 and 1999 and Rock Eagle 1999.

Address:
E-mail: mcqueen_tena@colstate.edu
Phone: (706) 565.3615
Fax: (706) 565.3529

Adding up the Distance: Critical Success Factors for Internet-Based Learning in Developmental Mathematics

Rob Foshay
Vice President, Instructional Design & Cognitive Learning
PLATO Learning, Inc.

Stella Perez
Principal Investigator
The League for Innovation in the Community College

The Internet and distance learning hold untapped potential to change the culture, curriculum, and course of educational institutions around the world. At the crossroads of the developmental education sector and the application of technology resources are two partners, the League for Innovation and PLATO Learning, Inc. In the spring of 1999, the League and PLATO® initiated an action research project exploring the questions and challenges of implementing successful distance learning developmental math programs for community colleges across the country.

College Participants

Selection of participants from League Colleges and League Alliance Members was based on specific commitment criteria. Each participating college was asked to designate two faculty members and commit training and service time to research and program development. The research consortium initially included nine colleges; however, eight fully implemented PLATO On the Internet (POI) as part of their developmental mathematics program:

- Central Florida Community College, Ocala, FL
- Delta College, University Center, MI
- Kapiolani Community College, Honolulu, HI
- Kirkwood Community College, Cedar Rapids, IA
- Moraine Valley Community College, Palos Hills, IL
- Miami-Dade Community College, Miami, FL
- Santa Fe Community College, Gainesville, FL
- Sinclair Community College, Dayton, OH
- Eastfield College (Dallas County Community College District, Dallas, TX) initially planned on being a member of the consortium, but college and departmental obstacles prevented implementation of the PLATO on the Internet® curriculum.

PLATO on the Internet Courseware

PLATO on the Internet (POI) courseware is a modular, self-paced, computer-based learning system that offers students interactive learning opportunities in mathematics, reading, English, and core work skills with over 2,000 hours of instructional content available. As a comprehensive academic and applied skills courseware system, PLATO uses computer-adaptive integrated learning processes for student assessment, prescriptive placement, interactive instruction, and evaluative testing and feedback.

Project Goals

The purpose of this project was to explore critical success factors for computer-based distance learning in developmental math programs during a summer trial implementation session and a full fall semester term. College participants, League research team members, and PLATO service teams outlined four areas of investigation:

- Development of effective, individualized, open entry/open exit programs for developmental students via distance education
- Cultivation of learners' motivation through the use of technology in developmental studies programs using distance education
- Exploration of successful developmental student profiles using distance learning technology
- Effective combinations of campus-based support service and distance learning delivery systems as models of success for developmental learners

Data Collection Model and Processes

The project goals combine grades, college profiles, and student and faculty feedback as factors of study; therefore, the research design included quantitative and qualitative analysis. A Data Collection Checklist was developed, and the data collection forms and materials were made available through the League Web site. During the project, students and faculty completed survey documents online and their responses were captured to a database. A listserv was also established as a primary communication tool among participants and researchers. Six primary data sets were collected:

- College Profile Survey and Narrative
- Student Profile
- Learner Survey
- Learning Community Survey
- Instructor Survey
- Course Completion Outcomes

College Profiles

Participating colleges offered a great range of history and experience with technology in their developmental studies programs. Some colleges have been actively involved with computer-based applications for over 20 years, while others noted this project as their first attempt to use technology tools with developmental learners. The completed college profiles document an average of 8 years experience with computer-based learning, with a median value of 5 years experience. (See Table 1.)

Table 1: POI Implementation by College

College	POI Implementation Summary
Central Florida Community College	• Supplemental lab session for Pre-Algebra course; textbook used • Web page developed as course communication tool • Mandatory group orientation • Distance learning format from home or campus lab • Dedicated technical support services for course vs. program, department and/or college
Delta College	• POI used as a primary source of instruction for introduction to Pre-Algebra; textbook used • Open entry/open exit • One-to One mandatory student orientation • Distance learning format from home or campus lab • All developmental math students offered opportunity to use POI courseware as self-study practice option during scheduled open-lab times
Kapiolani Community College	• POI used as a primary source of instruction for highest level Pre-Algebra; no textbook used • Web page developed as course communication tool • Mandatory group orientation • Distance learning access only from home • Additional handouts were developed to support course objectives • Students required to attend 2-hour lecture each month for test preparation and progress reporting
Kirkwood Community College	• POI used in a non-traditional college math prep section aimed at upgrading assessment scores of students for limited enrollment programs • POI curriculum used as primary source of instruction; student assignments, tests, and progress evaluated by POI courseware • One-to One student orientation • Distance learning access only from campus lab • Final evaluation using post-test results from college assessment testing
Miami-Dade Community College	• POI used as a primary source of instruction for introduction to Pre-Algebra; textbook used • Open entry/open exit for "Mini-term" session • One-to One student orientation • Distance learning access only from home • Majority of participating students enrolled in the course after transferring from more semester-bound traditional courses
Moraine Valley Community College	• POI used as a primary source of instruction for basic math/fundamental of arithmetic and introduction to Pre-Algebra; textbook used • Mandatory group orientation

BEST COPY AVAILAB

College	POI Implementation Summary
	• Distance learning format from home or campus lab • Faculty members maintained formal weekly schedule—3 times a week for one hour—and during this time were available to students for lab work and/or progress meetings • Course objectives included specific POI lessons as graded assignments
Santa Fe Community College	• POI used as a supplemental resource for Pre-Algebra; textbook used • Mandatory group orientation • Distance learning format from home or campus lab • Students used POI courseware in a college lab-based setting as part of a regularly scheduled course.
Sinclair Community College	• POI used as a primary curriculum for Pre-Algebra; textbook used • Web page developed as a course communication tool • Open entry/open exit • Mandatory group orientation • Distance learning access only from home • Faculty maintained weekly routine contact with students and an informal policy of 24-hour reply to concerns and issues

Faculty Participants and Instructor Surveys

Faculty participants were asked to evaluate POI software based on four criteria:

1. Student interface and design
2. Depth and breadth of curriculum content
3. Ease of navigation
4. Instructional experience

Student interface and design. Faculty responded favorably to the look and feel of POI software for developmental math students. They overwhelmingly agreed that the courseware was free of errors and used enticing color and appropriate graphics in an engaging way for adult learners. Project leaders also affirmed that POI lessons involved students through frequent interaction and feedback, rather than just passive reading and mouse clicks.

Curriculum content. All agreed that the quality and style of POI online instruction was consistent and generally met all developmental math course objectives, allowing faculty to use POI as a primary source of curriculum. Some suggestions were made for additional topic development and/or expanding specific math concepts online, and offering the ability to customize lessons with course objectives. These points noted, faculty were overwhelming satisfied with POI content, curriculum, and courseware.

Ease of navigation. Barring the start-up technical challenges that were detailed by many project participants, once online, faculty concurred that POI was easy to use and that lessons had

BEST COPY AVAILABLE

consistent style, quality, and keystroke use. Respondents noted that POI was easy to "navigate" and students rarely seemed confused or "trapped" by the system.

Instructional experience and comments. In addition to Likert-scale survey questions, project leaders were asked to respond to a series of open-ended questions regarding their best teaching experiences with POI. Faculty pointed to six best outcomes of the POI project:

- *POI Tutorial Functions.* Students use the system for math concepts remediation functions, allowing more time for individual faculty/student contact and discussion.
- *Flexibility.* Students have a real option to work anytime/anyplace.
- *Self-Paced.* Students are not stalled by predetermined course schedules; they may complete assignments in as little or as much time as necessary.
- *Privacy.* Students can operate in a private environment, interact in a computer-adaptive environment, and efficiently focus on concepts and areas they need.
- *Cutting Edge.* Students who have traditionally been offered second-rate services are offered a state-of-the-art option.
- *Interactive Feedback.* Through POI's computer-adaptive environment, students receive immediate constructive feedback after each response rather than waiting for lesson or test results to monitor progress.

Student Profiles

Student profiles were collected at the beginning of the study to capture the demographics, characteristics, and backgrounds of the 185 student participants as presented in Table 2.

Table 2: Student Profiles

Gender	Male = 32%	Female = 68%
Average Age	27 years	
Ethnicity		
	African-American	3%
	Asian	16%
	Hispanic	10%
	Native-American or Alaskan Native	2%
	White	69%
HS Graduate	89%	

Learner Surveys

Motivational factors related to distance learning were documented through Learner Surveys as part of data collection. Students' expectations and measures of satisfaction were evaluated by a formal questionnaire with open-ended response topics. (See Table 3.)

BEST COPY AVAILABLE

Table 3: Student Expectations and Satisfaction

Category	POI Student Response Summary
Comfort level	POI students claimed high levels of experience and comfort levels, with minimal levels of anxiety, using computers, the Internet, and technology resources. Frequent faculty contact through Web page and/or e-mail was positively correlated to students' comfort level with distance learning.
Orientation and support services	Those who attended mandatory formal orientation more positively noted that questions and issues were answered and expressed greater ease of initial logon than those who had no formal orientation or a one-to-one orientation session.
Alignment of course objectives and POI assignments	Students shared more positive comments related to comprehension, time-on-task, and motivation when they recognized direct correlation of their online assignments with course objectives and exams.

Course Outcomes

As an indicator of progress and success, final grades from the fall 1999 semester were collected from all participating colleges. For those programs offering an open entry/open exit (OE/OE) format, in-progress measures were tabulated and assigned. Table 4 outlines the total sample of participants and project outcomes to January 1, 2000.

Table 4: Project Outcomes

Total Participants (*n* =)	Course Completers (at the close of the project)	In-Progress	Anticipated Success Rate
185	89 (48%)	27 (14%)	116 (62%)

Formative Conclusions

As an action research project, *Adding Up the Distance* began by exploring college administration, instructors, and students as independent variables of distance learning developmental math programs. From this study, researchers can conclude that the relationship of college resources, instructors, and learners in successful distance learning models is interdependent. Colleges that were most successful using POI with students created systemic balance in their distance learning developmental math programs. They added definition and purpose to the thought and conjecture surrounding "critical success factors for computer-based distance learning developmental math programs." In the paragraphs that follow, these factors are framed within six pre-defined categories of exploration and combined with documented analysis of the research project outcomes.

Development of Individualized, Open Entry/Open Exit, Effective Programs for Developmental Students via Distance Education

BEST COPY AVAILABLE

Beyond the traditional functions of student services and development of course objectives, services and curriculum should be enhanced to include a more comprehensive plan with the following four variables:

1. **Easy Access to Internet and Easy Navigational Courseware**. Courseware that makes logon/logout functions and transition from lesson to lesson as smooth as possible was cited as a benefit to successful students.
2. **Technical Support.** Repeatedly, students and faculty asserted technical support as the factor most important to program success.
3. **Alignment of Online Courseware and Course Objectives.** Programs that correlated course objectives with POI lessons in a meaningful way and connected assignments and class activities had more successful outcomes.
4. Individualized Instructional Format. Students and faculty noted the self-paced, individualized, anytime/anyplace functions of distance learning as the best features of the project.

Development of Successful Student Profiles Using Distance Learning Technology

5. **Student Recruitment and Counseling.** Proactive selection, preparation, and counseling with students entering distance learning programs were noted as key variables for successful course completion.
6. **Orientation.** Students who attended mandatory group orientations cited fewer technical problems and greater ease of navigation, and had more successful program outcomes.

Cultivation of Learners' Motivation Through the Use of Technology in Developmental Studies Programs Using Distance Education

7. **Student Connections.** Interactive and frequent contact was concluded as an important condition for success. The more successful POI programs in this study had structured assignment schedules and student contact requirements (via Web page, e-mail, or phone calls) as part of the calendar of course activities.

Combination of Campus-Based Support Service and Distance Learning Delivery Systems as Models of Success for Developmental Learners

8. **Faculty Development.** As noted, faculty participants had varying levels of experience with technology and computer-based applications. Those colleges that offered more than five professional development opportunities correlated with faculty who were active in attending workshops and conferences created the more successful programs in this project.

9. **High Standards of Quality and Content Development.** As might be expected, faculty who had experience with distance learning had successful program outcomes; however, faculty who were using distance learning as a developmental math option

for the first time also experienced success. From the research gathered, it is concluded that those faculty members who were first-time users of distance learning showed great interest in computer-based applications, self-initiated the learning curve associated with teaching with technology, and took advantage of the interactive and mastery-based format of POI courseware. They closely reviewed POI content and were actively involved in new curriculum development and content upgrade for their courses. They were also very active in seeking technical support and assistance from the PLATO helpdesk and their assigned PLATO educational consultant.

10. **College Leadership and Program Support.** Participating colleges that designated priority, support, and commitment of resources for technical investments to this project clearly saw successful responses from both faculty and students. Although transparent in some instances, administrative support was recognized in this analysis as clearing the way for successful implementation, program development and student access leading to high quality services and learning opportunities for students.

Reference

Perez, S., & Foshay, R. (in press). *Adding up the distance: Critical success factors for Internet-based learning in developmental mathematics.* Mission Viejo, CA: The League for Innovation in the Community College.

Biographical Sketches

Rob Foshay, Ph.D. is Vice President for Instructional Design and Cognitive Learning for PLATO Learning, Inc. He is the chief instructional architect of the PLATO learning system, and directs PLATO's ongoing independent evaluation program.

Address: 10801 Nesbitt Avenue South
Bloomington, MN 55437
E-mail: rfoshay@plato.com
URL: www.plato.com
Phone: (800) 869-2000
Fax: (630) 357-8089

Stella Perez, Ph.D. is President of Working Class Software, Inc. and consults with the League for Innovation in the Community College with concentration on the League's Web initiatives.

Address: 25622 La Alameda, Suite 370
Mission Viejo, CA 92691
E-mail: stella@wcsoftware.com
URL: www.league.org
Phone: (949) 367-2884
Fax: (949) 367-2885

Adapting Traditional Instruction to Distance Learning

Nicole Gallmann
Undergraduate Teaching Assistant
Illinois State University

Steven E. Kagle
Professor of English
Illinois State University

Illinois State University has been making major changes in its general education program and the creation of distance-learning versions of general education courses is important to this effort. In creating a distance learning version of a course entitled American Culture: Traditions and Texts (cross listed by the English and history departments), it was important to demonstrate that its students received an education equivalent, if not superior, to that in traditionally delivered courses. To meet that standard, we have developed a number of teaching techniques and materials applicable to a broad range of distance learning situations.

The assumptions underlying our efforts include the following:

1. Distance learning and traditional instruction are not so different as commentary in the media would suggest. Printed or even manuscript books have long served as distance-learning media allowing the transmission of ideas across space and time.
2. While some traditional methods are deficient, they have worked, and the best of them have benefited from centuries of experience.
3. It is not necessary or even desirable to abandon those successful traditional methods in creating distance-learning courses, because many, if not most, of the features that make them successful can be adapted to distance-learning situations.
4. Technology can benefit both traditional and distance-learning education is more important in distance-learning situations.
5. The adaptation of traditional methods into distance-learning courses will make it easier for those familiar with traditional instruction to benefit from distance learning.

Unidirectional Delivery of Information

Both traditional and distance-learning courses have relied heavily on two methods for delivery of information: printed text and live delivery (including lectures and audio visual presentations). Text has many advantages over lecture including speed of transmission and permanence. A reader can acquire information far more quickly from texts than from lecture. Moreover, the reader can alter the pace of transmission and can easily return to review material presented. However, live delivery has the advantages of excitement and personalization. In moving from printed text to e-text, distance learning can combine many of the benefits of print and live delivery as well as offer benefits not available through either form of instruction:

1. Benefits include **size and cost**. An e-text on a CD-ROM will hold more text than a large bookcase, and the storage capacity of electronic materials is growing. New DVD (Digital Video Disk) technology allows one disk to hold many times what a traditional CD-ROM holds. Computer texts can be reproduced more inexpensively than printed texts and can be revised more easily and quickly. In large quantities, one can make copies of a CD-ROM for less than a dollar. Even with professional duplication, printing, and packaging, the CD-ROM that we use in our class costs less than $3 to reproduce in small quantities. There are additional and greater costs involved in the labor, training, and software required to produce the original, to purchase permission for inclusion of copyrighted materials, and to cover expenses related to sales and distribution. However, even with these included, a campus bookstore or a company that makes the printed packets used in many college courses can sell the CD-ROM for far less than the books and printed packets that have been previously used. Even if students print a hard copy of the actual material on the CD-ROM, the cost may be far less than it would be with other printed materials because the text can be tailored to the individual's use. Moreover, it can be updated easily.
2. Another advantage is the ability of the end-user to make use of **the power of electronic texts.** We teach our students to use the e-text for notes and projects by copying, modifying, and linking texts and objects. They learn to mark and highlight texts to copy all or any portion of reading assignments into notes, and even to add notes to a text. Instead of squeezing notes into the margins of a print text, they can insert comments in a text and even color or highlight an annotation to distinguish it from the rest of the text. Our students also learn how to create hyperlinks that connect their notes to texts, study guide material, glossary definitions, etc. They then can quickly search and index their notes and incorporate them into papers and projects.
3. Still another advantage is the ability to **move between different parts of the material**. For example the homepage on our CD-ROM and web site includes links to the syllabus, the e-texts, the study guides, the course instructions, the paper assignments, and the contact information. The syllabus lists all the assignments and has links to each text in a given assignment section. As we will explain later, the study guides are extensively cross-linked and layered. In addition, there is a scrollable index to an extensive glossary and dictionary of terms. These sections are themselves interconnected. The glossary is not only interactive and cross-referenced, but also linked to examples, many of which are located in the e-texts for the course.

Interactive Learning Processes

Much education involves interaction. This process involves feedback such as that which takes place in traditional discussion classes. We have done a number of things to incorporate this interactive quality into our distance learning class:

1. We have created what we call a *FutureText®*, an extensive series of study-guides, texts and other materials as part of our CD-ROM. We have designed these materials to **replicate the interaction that takes place in the discussion classroom**. The study guides provide the equivalent of lecture material by providing extensive background information on the texts and images covered in the class. Linked to the electronic text and other illustrative information, they allow students to move easily and quickly to the texts. However, they no only transmit information, but like discussion classes they also engage the student in an active investigation. They do so through *layering*. Lectures are essentially unilayered with information provided in a single unidirectional sequence. The questions posed, are essentially rhetorical devices their answer known beforehand. In a discussion classroom the instructor asks questions and receives responses. These responses are rarely expected to elicit simply a correct or incorrect response, the latter to be followed by a simple correction; more often they are designed to offer a process of investigation that shows the students how truth is discovered. Our study guides ask questions, but rarely lead directly to *the* "correct response" or even to *a* "correct response." After clicking on a study question, the student is more likely to encounter a series of *layers*, stages that offer examples for consideration, additional information, and hints. This process focuses student attention on how knowledge is acquired, a process that can be replicated in dealing with new data and texts.
2. In almost every learning situation, whether in an educational or a commercial setting, one is likely to encounter such resistance. Despite, the publicity given to the "information age," many students are still resistant to using computers and electronic media. Seeking to use and refine techniques for **overcoming this resistance,** we have created methods that make distance learning quickly attractive and ultimately more productive.
   A. We have used the **Chromatek 3D process to create pictures and videos** that add excitement to presentations and draw attention to hyperlinks and other elements. Links float above the base text, receding into the background after a task has been attempted. 3D elements add excitement to our images and videos and break down resistance to the use of electronic materials. Other small touches, such as the use of e-mail with a picture of the sender, help create a sense of personal contact. They are also useful in making arrows and other pointers seem less intrusive.
   B. We have used **Undergraduate Teaching Assistants** to maintain a close contact with the students in the class, a process that benefits the distance learning assistants as well as the students. The professor has participated in most on-line chat sessions that replaced the in-class discussion sections handled by graduate students in traditional sections. However, the undergraduate student assistants have allowed for even greater contact than that in traditional sections by maximizing contacts without increasing costs. While these assistants cannot replace the professional educators, we cannot emphasize too strongly the importance of these teaching assistants in personalizing distance learning. Undergraduate Teaching Assistants, chosen from among those who have already completed the class and demonstrated superior skill, have proven to be exceptionally well qualified to engage their fellow students in discussions. A

subsidiary but substantial benefit has been the improvement of skills of the interns or teaching assistants, making them better prepared for future employment.

C. We work to **personalize the experience by making students partners in the process of creating distance learning materials.** While most of them have had only minimal experience with computers, they were quickly able to perform these tasks. By involving the receiver of information in the creation of such materials, we not only increase end user skills, but also increase end user satisfaction. The papers/projects are non-linear, hyperlinked (and often web-based) works that involve students in creating the same kind of materials used to educate them. The result is that the students have gained a heightened appreciation for the teaching methods associated with computerized materials.

3. We moved **to replicate the class discussions and individual conferences, progressing gradually from traditional interactions to ones facilitated by e-mail and a bulletin board system called WebBoardâ.** In the initial development phase, we started with traditional, but optional, live discussions and gradually led students into a complete distance-learning environment, making contact via e-mail and the WebBoardâ. The WebBoard used in this course is similar to other bulletin board programs offering message and chat features that take the place of discussion sessions, office hours, and even e-mail. The American Culture class's board and instructions can be accessed either directly or through links on our CD-ROM and website. The WebBoard offers a variety of options, but we mainly work with the message and chat functions.

A. The discussion sessions on the WebBoard allow a message from one individual to another to be read and responded to by all who log on, reducing the need for individual responses. Students can simply view the question or comment or join the "discussion" by replying. This process facilitates discussion among students, as well as among students and instructors. Students are able to get more out of the class because every student can benefit from questions asked by others. Students found the WebBoard to be user friendly and an effective alternative to discussion sessions and e-mail. Moreover, many became more involved in the course, gained a greater understanding of the course material, and became familiar with the technology involved.

B. The chat function takes the place of the weekly discussion sessions used throughout traditional classes and in the first sessions with distance learners. Students are able to chat with the instructor, their TA, and other students about the readings or any other topic relating to the course. The chat was more informal than in the earlier classroom discussion sessions, creating an environment that facilitated greater participation and more student-to-student interaction. Furthermore, this chat feature allows students, whether they are on campus or not, to ask questions and to see what kinds of topics are of interest to other students at that time. The traditional students, who attend lecture every week, were encouraged to use the WebBoard and they did so with increasing frequency. Their response supports our contention that the process is user-friendly and suggests that distance learning meshes well with traditional instruction. Like the distance learners, the traditional students liked being able to relax in an informal learning environment and still participate in a discussion for class. This alteration in the course's communication has allowed for further interaction between students and the instructor, and increased the opportunity for students to lead discussions. Students also increased their knowledge of and comfort with technology.

Exercises in Synthesis and Expression

Early in the development of this class we decided that it was important that students, as the recipients of a twenty-first century education, learn the skills that make such an education possible. We replaced the traditional unidirectional papers, with projects that give students experience with the interactive capacity of Internet-age media. Whether headed for teaching, business professions, the arts, or other endeavors, our students become more experienced and better credentialed for the future than they would be after completing a traditional paper. The fact that such work is well suited to distance learning was an added benefit.

In contrast to traditional linear style papers, the paper/ projects in American Culture are essentially websites. Students many submit their papers by e-mail attachment or on disk, but increasingly they have been posting their work directly to the web. The University provides each student with web site space that can be used for this purpose. These projects include hyperlinks and are usually multi-layered. This assignment forces students to take a different approach to thinking about problems and creating solutions from that with which they have been accustomed. They have come to appreciate that the paths to a goal may be multiple and that in making a presentation they need to consider alternative responses. They are gaining hands-on experience using the technology of the future, which will prove essential in post-college years.

The topics for the paper/projects are sufficiently varied so that all students have been able to find one that appeals to them. These topics are also broad enough that even papers on the same topic are clearly the creation of that individual student. Even if two students decide to do a game or a teaching tool on the same topic, their papers rely so heavily on the creativity of the individual that each is interesting and unique. Students have the freedom to create what they imagine through the use of hyperlinks and by doing so demonstrate a deeper understanding of the course. Typical projects have involved the creation of interactive casebooks, games, artistic works, etc., that allow students to incorporate course material into their overall vision. Utilizing the multi-layered requirements for the paper/ projects, students add hyperlinks, which then allow the resulting work to be made into a web page. A portion of the text, a picture, or anything else that the student identifies as significant can be linked to their paper/ project. The topics provide excellent experience using the technology they will employ in future careers. For example, those students interested in education can choose a pedagogical assignment that involves the creation of multi-layered teaching tools similar to the ones used in the course.

The use of technology in each of these topics has advantages not found in the creation of traditional papers. The ability to include links encourages students to incorporate course materials and causes them to look at readings in greater depth. Moreover, the students learn analytical skills that prove essential in other courses and in various careers, providing them with a basic understanding of technology and its utility. This knowledge is essential in many job fields like education, business, and web design to name a few. Students are not only learning how to create interactive papers for this course, but also how to apply this knowledge in the real world. Many have recognized its utility in their future careers. While not its only mission, Illinois State University has long been dedicated to preparing teachers and several students have chosen to create a pedagogical tool for the paper/ projects. Upon completion of their work, many students expressed satisfaction with their new ability to create effective teaching tools. They express satisfaction with the opportunity to write "a paper with a purpose," instead of an assignment that many perceive as only "busy work."

Conclusion

Personalization and immediacy are no more exclusive to traditional instruction than electronic materials and Internet communication are to distance-learning courses. Rather than pretending that distance learning is fundamentally different from traditional instruction, we have operated upon the assumption that we could modify traditional instruction to fit a distance-learning environment. Judged by subjective measures of student satisfaction and objective measures of student performance, the distance learning section at least equaled the outcomes in sections receiving a traditionally delivered version of the course. The materials that made this success possible also produced benefits when reintroduced into traditional instruction sections.

This course was developed with assistance from a grant from the "Program for the Development of Distance Education Courses Utilizing Technology" at Illinois State University, Normal,

Biographical Sketches

Nicole Gallmann is an Undergraduate Teaching Assistant at Illinois State University. An English major she was the discussion instructor for the distance learning section of English / History,131 American Culture: Texts and Contexts in the spring semester 2000. She previously served as a Supplemental Instructor in Biology and as a Teaching Assistant for the University Center for Learning Assistance.,

Address: 1012 Tamarind Dr.
Galesburg, IL 61401
E-mail: ngallmann@hotmail.com
Phone: (309) 343-5701

Steven E. Kagle is Professor of English at Illinois State University where in the early eighties he was involved in one of the first large scale moves to a university wide computer based writing program. He later helped to design computer classrooms adapted to the humanities. He has been involved in the creation of computer readable texts and for the last 4 years has been teaching a variety of essentially paperless courses in literature and American studies. These have relied on a variety of hypertext creation systems in courses ranging from small seminars to large lecture classes. In some, students have taken the course via distance learning. In others, students have received all or a portion of their instruction via distributed electronic media or the Internet. He is the author or editor of six books and numerous articles and presentations, and he served for ten years as editor of *Exploration* a scholarly journal. He is currently working on two computerized books for use in distance learning and for supplementing traditional instruction. He is the recipient of several grants including one for distance learning.

Address: Department of English
Illinois State University
Normal, IL 61790-4240
E-mail: sekagle@ilstu.edu
URL: http://cas.ilstu.edu/english/kagle
Phone: (309) 438-7596
Fax: (309) 438-5414

The UT System MBA Online Adventure

Corbett Gaulden, Jr., Associate Professor of Marketing
University of Texas—Permian Basin
Co-chair, MBA Online Academic Affairs Committee

Darcy Hardy, Director
The UT TeleCampus
www.telecampus.utsystem.edu
The University of Texas System

At last year's conference, the authors introduced you to the UT System collaborative effort that produced the MBAOnline. Significant detail on the effort was included in that session[1].

At that time, the first semester of the MBAOnline experience was about to begin. In fact, registration for the fall semester got underway while we were in attendance at the conference. A year of experience with the project has now flown by at a snail's pace. In this session, we want to inform you of what that year's experience has taught us. Please remember that the UT TeleCampus was "created" in May of 1998. Shortly thereafter, the deans of the schools of business in the UT System met for the first time to talk about this particular collaborative effort. The first courses were available to students by August of 1999. Take it from those who know, that is quite a pace.

The frantic pace continues. At the time of writing of this paper (June 2000), eight courses were online and had been offered at least one time each. One course is in its third offering. Five more courses are in the late development phase and will be deployed for first time offering by the time you attend this session. Three more courses are well into the development phase and will be offered in the spring semester of 2001. In all, some sixteen graduate level courses will have been designed, developed and deployed between January 1999 and January 2001. The sheer magnitude of this project is impressive in itself. The fact that we have pulled it off with no more loss of sanity than we have is staggering. In this session, we hope to lay out for you a sense of what it has taken to pull it off. In addition, we will vignette a few students who have helped make it worthwhile.

Quick Overview: Getting It Started

Those of us familiar with the recent technological changes in education can see a definite tension between the wisdom of instructional design and the reality of technological change within the matrix of administrative momentum. These three forces do not intersect happily as far as we can tell. The idea that we would be very deliberate in the selection of instructional technology (a sound principle of instructional design) seems to run aground on two fronts. First, in recent years technological horizons have expanded and technological possibilities have grown at a tremendous pace. Second, administrative momentum typically runs far behind technological possibility. But, when that administrative momentum finds a focus, it can often send us in some particular direction at a tremendous pace, but, alas, perhaps long after the direction has otherwise been abandoned. We believe that these tendencies have been operant, but not overly problematic in the program under discussion.

---

[1] C. Gaulden, D.W. Hardy & J. Rees, "The Care and Feeding of an Online MBA Consortium: The Texas Experience," Proceedings: the 15th Annual Conference on Distance Teaching and Learning, University of Wisconsin, 1999, pp. 193-199.

In a period of about fifteen months, a number of events related to this particular program occurred. First, the UT TeleCampus was announced. Almost immediately, players began meeting in Austin to find some short-run foci for the TeleCampus. The first new project to emerge was the MBA Online, a consortial effort among eight of the nine academic institutions in the UT System. The program received an initial design and the working arrangements among the components were put into place. These arrangements were, themselves, rather remarkable for the system. Autonomy is really important to the individual components. The degree of collaboration required to pull off this effort was stunningly demanding.

About six months after the TeleCampus was inaugurated, the MBA Online program was designed, courses specified, the authors of the first eight courses identified, and some training on the courseware platform undertaken. Within a matter of another six months contracts were negotiated, two oversight committees (Executive and Academic Affairs) were established, meetings and video conferences were held on a variety of topics, and seven of sixteen courses were well into their development cycles. In addition, bulletin boards and e-mail lists were established to facilitate communication among the various parties working on the project. Issues related to accreditation and course/program oversight occupied much of the time in these meetings.

In less than fourteen months after the MBA Online was conceptualized, all necessary political and logistical work necessary to get the thing going at eight components simultaneously had been completed and the program was launched - looking like eight separate programs at the same time. Space does not permit a catalog of what actually went into that launch.

Running It

As we were launching and faculty were in the euphoria of stunned amazement that we had done it (so far), the TeleCampus folks were already prodding us to get ready for the second round of course development contracts. In addition, three (or four, depending on how one counts such things) deanships were in the process of transition. That's about half of them, for those counting such things.

About two months after the start date, we were beginning to have a feel for what was happening. A joint meeting of the two committees was called to discuss what was happening. Topics included enrollment levels, course evaluations, and the second round of course funding. At this meeting, we experienced the reality of our first round of changes in committee composition. Not only were deans changing, there were changes in faculty composition as well. Both committees stood to be significantly impacted soon by changes in membership. This evolution was a bit disconcerting. And, it underscored the need for a handbook that would provide continuity as faces changed.

We got through the first semester. And, we conducted what turned out to be a makeshift course evaluation process. The TeleCampus staff really carried the burden of this process. They did an admirable job, but were almost reduced to a vocabulary of expletives only as a result. It was hard work. On the other hand, the results were quite useful to all of us. They could be used by faculty members for course improvement, deans for evaluation of faculty performance and the TeleCampus staff to respond to regental inquiry and to develop more straight-forward processes for the future.

The second semester of the program saw modest growth in the program in terms of the number of students. The faculty were now seasoned and made whatever changes they saw fit. A couple of the courses were not offered in the second semester so that planned course sequences could be implemented. Some faculty tried new things, some didn't. The eighth course was added to the inventory. Contracts were awarded and work began on the second round of courses. The new course evaluation procedures were honed.

In April of 2000, the three committee chairs, apart from the committees, to develop a first version of the greatly needed Handbook of Operating Procedures. This document went out electronically for comment to the members of the committees soon after. The Executive committee met in Austin on May 22, 2000 to consider the handbook and made some suggestions for improvement. The Handbook is now out for comment from members of both committees. Hopefully, adoption will occur this fall.

At the time of this writing, the authors know of at least four significant inquiries concerning some kind of joint venturing with parties outside of Texas who wish to take advantage of the work we have completed. Each of these inquiries is different. One seems to be significantly underway at this time. For the most part, these inquiries imply increased enrollments for the program. They also generally imply some alternative approaches for the use of the program and the courses developed for the program.

What We Found Out

First, it can't be done—at least not in this kind of time frame and at this scale.

Second, it can be done if people are really determined to get it done and really go after it. This assumes adequate support from folks at the top. In this case, the regents and the chancellor of the UT System have been solidly behind the program - both rhetorically and financially. And they have stuck it out. Availability of resources is absolutely essential. The TeleCampus has been crucial, not only is providing a variety of resources, but in being fairly flexible about how the resources are used.

Third, faculty buy-in is very critical and hard to obtain and maintain. It remains a very high priority to make such an endeavor successful. Faculty involvement might seem like an obvious matter, but the road to consensus has been difficult.

Fourth, a system of centralized resources and distributed responsibilities is hard to put together, but absolutely essential to such a project.

Fifth, identity and continuity must be built in, while nurturing an environment of flexibility. Responsibilities must be well-defined and reduced to the (unfortunate) policies, procedures and forms while preserving local campus autonomy as fully as possible.

Sixth, our eyes saw things bigger than they were. The market did not fall out of the sky, but it is there. Response was not in terms of thousands of students, but it has been dozens and is on the way to hundreds. Time alone will prove the true size of the demand for such a program, but we are now in position to be ready as the demand develops.

Managing Its Future

The UT TeleCampus is committed to expanding the logic of the MBAOnline, and is doing so. While the MBAOnline course development activity is in its final phase, other programs are getting under way. A variety of consortial arrangements are being formed among the components of the UT System. No two really look alike, but they all share the support of the TeleCampus staff, the course development platform, and the campus infrastructure developed before or during the MBAOnline project. It should be obvious to all that this is an appropriate focus for the TeleCampus. At the same time, programs already launched need continued care. That is the primary business of the MBA Executive and Academic Affairs committees.

There is no sense that the TeleCampus will "abandon" the MBAOnline program. The program is too intimately involved with the resources of the TeleCampus. Furthermore, the results achieved by the programs it helps to spawn will always be important to the TeleCampus. However, reality is that specialization works. The TeleCampus performed in a superhuman manner in getting this thing going. Now, they are involved in launching other very significant initiatives.

The long-run success of the MBAOnline program rests primarily in the hands of the faculty and deans who are responsible for it. TeleCampus marketing of the program is important, but so is marketing at the local Chamber of Commerce. We find ourselves at a time of transition.

As one would expect, anything of such character is a curiosity to others. This is largely a result of its association with the University of Texas System. It is also a result of its unique qualities. At the time of transition, we are grappling with a set of issues that will largely determine the future nature of the program. Contacts with non-academic entities as well as universities in other states and at least three other countries have already occurred. How will we deal with such requests? How will they influence the future of the program?

Of course, we are also examining such issues as optional courses and program tracks. Very few MBA programs are as lock-stepped as this one appears. Sixteen courses - fixed. Nearly any program you can find involves course options. Many involve a variety of tracks - sometimes with formal track specification. Where will new courses come from? How will their development be funded? How will they fit into the program? A logical extension of this question is, What tracks will be developed (or simple emerge) over time? How will they be managed? What will be their relationship to local programs? These issues are already occupying the attention of the folks involved with the MBAOnline.

Other questions have to do with ongoing oversight. How shall the committees function? How does a faculty member get a new course "into" the program? What support will be available to faculty members in the future to gain such program diversity? What new resources will be developed (for example, more digital library resources)? How will consortial relationships be maintained into the future as this form of education becomes more common on each campus? You've probably thought of other problems. Please share them with us.

Summary

We've come a long way in a short time with the MBAOnline. In many ways, it was a marginal activity for most of the folks involved. However, we feel that the launch and first year of run was as good as it could have been. Most of what it takes to get it going has now been discovered, or has evolved out of necessity. The future for the program looks quite good, but the number of directions in which we can go is wide open. This ride will be exciting for a long time to come.

Biographical Sketches

Dr. Corbett Gaulden, Jr. is Associate Professor of Marketing at the University of Texas of the Permian Basin and co-chair, MBA Online Academic Affairs Committee.

Address: University of Texas of the Permian Basin
4901 East University
Odessa, TX 79762
E-mail: gaulden_c@utpb.edu
URL: http://www.utpb.edu/business
Phone: (915) 552-2202
Fax: (915) 552-2174

Dr. Darcy W. Hardy is Director of the UT TeleCampus, www.telecampus.utsystem.edu, the University of Texas System.

Address: University of Texas System
Ash 426
201 West Seventh Street
Austin, TX 78701
E-mail: dhardy@utsystem.edu
URL: http://www.telecampus.utsystem.edu
Phone: (512) 499-4213
Fax: (512) 499-4715

Collaborative Distance Learning for Advanced French Oral Proficiency in Professional Contexts

Aline Germain-Rutherford
Associate Professor
Trent University, Ontario, Canada

Nelly Halzen
Lecturer
University of Wisconsin-Madison, WI, USA

As part of the new Professional French Masters Program offered by the Department of French and Italian at the UW-Madison, French 524, a Professional French Oral Proficiency course, was redesigned to incorporate distance education technologies to allow the course to be offered to students in a non-traditional format that permits both on-campus and off-campus students to enroll in the course. Targeting both graduate students and advanced undergraduate French majors whose future profession requires a mastery of French in professional settings, the course's implementation has 2 stages: (1) Year 1999-2000 with a focus on collaboration with UW-Stevens Point in redesigning the course curriculum to allow students at both the UW-Madison and the UW-Stevens Point campuses to enrol in the course, as well as the exploration and utilization of new distance education technologies; (2) Year 2000-2001 with a focus on collaboration with a wider audience such as other UW campuses, other CIC institutions, and individuals or professionals who wish to take this course from their home or place of work. This presentation is an evaluation of the first stage of the course's implementation as offered during the spring semester of 2000.

Description of the Project

The team.[i] As shown by the title of this presentation: "*Collaborative* Distance Learning for Advanced French Oral Proficiency in Professional Contexts", the design, implementation, teaching and administrative management of this oral distance course are the result of a strong collaboration between several institutions and researchers, both in Wisconsin and in Ontario.

Course objectives. *French 524* is an advanced oral communication course concentrating on material that has been developed specifically for students whose future profession requires a mastery of French in professional settings such as business, international relations, teaching, public relations, and the media. The goals of the course are (1) to develop the students' theoretical understanding of the linguistic and sociocultural components of communication, and (2) to perfect their ability to successfully engage in various "actes de paroles" found in professional situations[ii].

Pedagogical approach. The design of the course and the choice of the technological tools to conduct the course revolved around two main ideas: the first was inspired by Tardif and Mukamura's definition of teaching with their emphasis on human interactions: *"Métier de relations humaines, l'enseignement exige donc des interactions humaines. [...] Seuls des êtres humains peuvent former humainement d'autres humains. Cette vérité fondamentale est à la base* *même de cette réalité anthropologique fondamentale qu'est l'activité éducative : l'être humain est un être qui a besoin des autres pour devenir humain, et c'est par la médiation avec les autres humains que sa propre humanité est rendue possible.* » (Tardif & Mukamura, 1999 : 15); the second follows the constructivist conception of learning as an active process of construction of knowledge facilitated through collaboration, reflective interactions and discussions among learners (Dalgarno, 1996, Lefoe, 1998, Ferry and Brown, 1998, Agostino, Lefoe and Hedberg, 1997).

Oral communication, an inherently social activity, is traditionally taught through extended face-to-face contact between instructors and class participants. The challenge here was to build a learning environment interactive enough to foster oral communication between participants located at four different sites: three students in the UW-Stevens Point class, six students in the UW-Madison class, one student from her house in Marfa, Texas, and the lead instructor located at Trent University, Ontario, Canada. A mixed mode delivery approach was therefore used for this course.

Course Organization and Learning Tools

Face-to-face interaction. In order to "break the ice" and meet all participants of the course, the session started with an intensive weekend at the UW-Madison Campus. For two days students from both UW campuses, as well as the student from Texas met the entire pedagogical team who presented the course objectives, the software and the videoconferencing facilities. But most of the weekend involved a "Simulation Globale", an intensive collaborative oral language activity where students and instructors interacted to build and simulate an international conference with a variety of oral speeches developed and delivered by the students. Camcorders were used by the students to film and view their work at every stage of the simulation. The objective was to start to develop a self-assessment awareness which would be encouraged throughout the semester. The course concluded with a second intensive weekend at the UW-Madison Campus, where students finalized and presented their last oral assignment researched and built collaboratively during the last three weeks of the course. In addition to these two intensive face-to-face group sessions, each student was attributed an on-site facilitator for a 20 minute meeting every week to discuss any aspect of the course or of an assignment. The student located in Texas was to meet her "distance" facilitator every week via a Chat room.

Computer mediated communication. Research has shown that the use of CMC (Computer Mediated Communication), allowing learners in different geographical locations to interact with one another either in synchronous or asynchronous mode, helped the construction of knowledge, as learners can formulate their ideas into words, reflect on them, and build on these ideas through the response from others. (Agostino, Lefoe and Hedberg, 1997, Esch, 1997, Kern, 1995, St John & Cash, 1995, Warschauer, 1996, 1997). Different studies have also demonstrated that this type of interaction, in a language learning setting, allows a greater metalinguistic awareness, a higher level of syntactic and lexical complexity, and a less stressful thus more risk-taking environment, than a face-to-face interaction (Esch, 1997, Kern, 1995, St John & Cash, 1995, Warschauer, 1996, 1997). Esch describes this type of communication as the intersecting point between Interaction and Reflection (Esch, 1997 : 2).

Although CMC is a text-based interaction and that, "*while it is reasonable to assume that computer-mediated discussion contributes to written fluency [...], any claim that this transfers to oral communication is at this stage purely speculative*" (Warschauer, 1997 : 5), we chose nonetheless to favour this type of communication for our distance oral course to encourage metalinguistic awareness and conscious language learning, reflective processes shown to help the construction of knowledge. The whole course was built in a WebCT environment, using several of the CMC tools this Web-based course management system offers. Students and instructors could interact synchronously and asynchronously via a Discussion Forum, several Chat rooms and individual e-mail accounts.

Videoconferencing. The main part of the course was delivered via weekly or fortnightly one hour or two hour videoconferencing meetings, conducted, from Ontario, by the lead instructor to the students of the two UW campuses. An audio connection was arranged for the student in Texas, in order for her to hear and orally participate. Every visual document presented during the videoconferencing sessions was previously posted on the WebCT site and therefore accessible via her computer. Each videoconference was also recorded and sent to her or any student who missed the class. At each of the UW sites, an on-site facilitator was present during all or part of the videoconference session, to assist students technically or linguistically if needed.

WinPitchLTL. The importance of feedback in the learning process is a non-controversial fact. Research has shown that adequate corrective feedback results in a greater "consciousness-raising" and "conscious learning" environment (Lamy & Goodfellow, 1998, Little, 1996, Long, 1996, Nagata & Swisher, 1995, Oxford, Rivera-Castillo, Feyten & Nutta, 1997, Théberge & Leblanc, 1998, Warshauer, 1996, 1997).

WinPitchLTL, a real time speech visualizer and synthesizer, falls, in our opinion, into the category of *mindtools* (Ferry and Brown, 1998), as it offers a plurality of functions enhancing conscious learning through precise and explicit corrective feedback, provided by the teacher at a distance or on-site, or by the program's functions (Germain and Martin, 1998, 2000). Through easy segmentation, visual and auditory comparison, signal editing, redefinition and synthesis of pitch curve and duration, students can learn to better detect and assess visual and auditory clues in their oral productions, in a progressive self-teaching training. The CMC tools integrated in this software allow a metalinguistic type of asynchronous interaction as the instructor and the students, while hearing and visualizing on their computer screen the discussed oral segment, can explicitly express questions and answers about phonetic, prosodic or discursive aspects of the second language.

The speech synthesis feature of WinPitchLTL allows learners to work on the suprasegmental level of the target language and to become their own model. By modifying the prosodic parameters of the signal, teachers can redesign the pitch contours or redefine intensity and duration of incorrect utterances. Learners can then visually compare their incorrect production and the targeted production, but most importantly, hear the correct prosodic contours with their own voice by activating the synthesis mode.

Assessment activities. The two written and three oral assignments were organized in such a way to gradually contribute to a final oral activity, collaborative in nature and prepared during the last three weeks of the session, to be presented during the closing week-end. The written assignments were e-mailed to the instructor and the oral assignments could either be presented during a videoconference or videotaped and sent by mail. The instructor would provide feedback and assessment through e-mail, using the written and sound Comment function of MSWord, or the CMC tools of WinPitchLTL. All throughout these activities students were encouraged to interact with the others and their facilitator using WebCT CMC tools as well as WinPitchLTL. They could also contribute on a voluntary basis to course content related discussions or language activities that the instructor would periodically launch on the Forum.

Evaluation and Recommendations for Phase 2 of the Project

The course was evaluated through on-line and hardcopies questionnaires sent to the students, as well as a live group discussion involving the students and the pedagogical team at the end of the session. The seven members of the team were then asked to put in writing their own evaluation of the course. As we write this presentation we are still in the process of assessing the first stage of this experiment, but already several conclusions can be drawn and several recommendations can be made.

1. Distance learning via videoconferencing and/or CMC changes the teaching/learning relation students have been confronted with for most of their student lives. An awareness and progressive training towards gaining a higher degree of responsibleness, of initiative taking and autonomy seems necessary for the students to profit fully from this new form of learning (Larose, Lafrance, Grenon, & Roy et Lenoir, 1998; Larose, David, Lafrance & Cantin, 1999; Guillemet & Provot, 1999; Benson & Hewitt, 1998). Although our students found the WebCT CMC tools very useful, only a few used them spontaneously to interact with the others. The Discussion Forum, considered by them as the most frequently used tool, was generally consulted to read messages posted by the instructor and less frequently to contribute to the on-going discussion. A more precise "agenda" for the Forum discussions, with well-set objectives, timetable and procedural rules would help the students to take full advantage of this tool (Berge, 1999, Mason, 1991). *Managing the interactions with strong leadership and direction is considered a sine qua non of successful conferencing* (Mason, 1991:2).

2. As shown by several studies done in post-secondary institutions (Larose *et al.*, 1998, Larose *et al.*, 1999, Lefoe, 1998, Benson and Hewitt, 1998, Agostino, Lefoe and Hedberg, 1997, Proulx and Campbell, 1997), computer literacy among university faculty and students is still pretty low. Saving documents, sending attachments, downloading files from the Internet, zipping or unzipping files are difficult operations for many. Adequate training to use the technology as well as strong technical support, both for the instructors and the students, are essential components of any computer assisted course. An under utilisation of WinPitchLTL as well as WebCT CMC tools demonstrated a lack of proper technical training for many participants. Explicit training combined with small collaborative projects involving the use of the technological tools before the session begins, and an extensive collaboration with the technical support people of each campus could help students and staff to overcome difficulties and profit fully from this

technology. But equipment availability, at home or on campus, as well as connection costs are also important issues to be addressed.

3. All the students saw the usefulness and benefits of the face-to-face opening and closing week-end sessions. To meet their peers and the pedagogical team, to interact directly with students and facilitators during the simulations, to be immersed for a whole week-end in the second language, as well as to be introduced to the format of the course and the technology it required was seen as an important element of the program, even though all wished more time had been devoted to WinPitchLTL's presentation and training. The mixed mode delivery approach balanced positively the human and technological aspects of the course, but a need to clearly define the role and availability of the on-site facilitators was felt by several students. Mason (1991) sees three essential roles for the on-line facilitator: an organizational role as the one who "*sets the agenda*", a social role in his/her skill to create a friendly environment and an intellectual role in his/her attempt to "*encourage students to expand and build on comments*" (Masson, 1991 : 3). These are elements which can help us better prepare and manage our interactions as on-line/on-site facilitators.

Conclusion

Pedagogy is a *technology of human interaction* (Tardif and Mukamura, 1999:15). We have tried, in the design and implementation of this Distance Oral course to preserve and foster reflective interactivity between students and instructors through the use of carefully chosen CMC tools, videoconferencing technology and face-to-face interaction. Although students and facilitators have a generally positive feeling about the experience, the first stage of this evaluation shows, however, a strong need to better prepare students and instructors psychologically and technically for them to become full partners and beneficiaries of this very promising new teaching/learning environment.

References

Agostino, S., Lefoe, G., & Hedberg, J. (1997). Online collaboration and problem solving for effective learning: A case study of a post graduate university course. *Proceedings of AUSWEB97 the Third Australian World Wide Web Conference*, Southern Cross University, Lismore. Available: http://ausweb.scu.edu.au/proceedings/index.html

Benson, R. & Hewitt, L. (1998). Breaking down the barriers: Developing online communication in an offline environment. *15th Proceedings of Australasian Society for Computers in Tertiary Education*. (ASCILITE) Wollongong: Australia. Available: http://cedir.uow.edu.au/ASCILITE98/ascpapers98.html

Berge, Z. (1999). The role of the Online Instructor/Facilitator. *eModerators.com* Available: http://www.emoderators.com/moderators/teach_online.html

Dalgarno, B. (1996). Constructivist Computer Assisted Learning : Theory and Techniques, in *Proceedings of the ASCILITE 96 conference*. F. Brown (ed.) Adélaïde, (Australie): Australasian Society for Computers in Terciary Education (ASCILITE), pp. 127-148.

Esh. E., 1997, Environnement Virtuel et Réalités Sociolinguistiques, *Les nouvelles: Technologies éducatives dans l'apprentissage des langues vivantes: réflexion théorique et applications pratiques*. INSA de Lyon, Available: http://www.insalyon.fr/Departements/CDR/environnement.html

Ferry, B., & Brown, C. (1998). The influence of reflective tools on teaching strategies and subject design, in *15th Proceedings of Australasian Society for Computers in Tertiary Education*. (ASCILITE) Wollongong: Australia. Available: http://cedir.uow.edu.au/ASCILITE98/ascpapers98.html

Germain, A., & Martin, P. (2000). Utilisation d'un logiciel de visualisation pour l'apprentissage de l'oral en langue seconde. *Apprentissage des Langues, Systèmes d'Information et de Communication (ALSIC)*, vol 3, 1, (in press).

Germain, A., & Martin, P. (1998). WinPitch Language Teaching, Easy Learning (LTEL): Un outil multimédia pour faciliter l'apprentissage de l'oral en langue seconde. *Conférence virtuelle sur les applications des TIC dans l'enseignement du français langue Étrangère*. Agence intergouvernementale de la Francophonie. Available: http://ciffad.francophonie.org/CONFFLE/RESSOURCES/contrib-martin.html

Guillemet, P., & Provot, G. (1999). Les NTIC et la formation à distance : vers une industrialisation insolite? *Éducation et Francophonie*, Vol.XXVII , N° 2. Available: http://www.acelf.ca/revue/XXVII-2/articles/Provost.html

Kern, R. G (1995). Restructuring classroom with networked computers: Effects on quantity and characteristics of language production. *The Modern Language Journal*, 9, 457-476.

Lamy, M.N., & Goodfellow, R. (1998). Conversation réflexives dans la classe de langues virtuelle par conférence asynchrone, *Apprentissage des Langues, Systèmes d'Information et de Communication (ALSIC)*. vol 1, 2. pp 81-99. Available: http://alsic.univfcomte.fr/Num2/lamy/defaut.htm

Larose, F., Lafrance, S., Grenon, V., Roy, G-R., & Lenoir, Y. (1998). Du discours officiel à la prise en considération des attitudes des clientèles face à l'informatique en pédagogie universitaire : bilan d'une enquête menée à la Faculté d'éducation de 'université de Sherbrooke. *EducaTechnologiques*. Available: http://www.fse.ulaval.ca/fac/ten/reveduc/

Larose, F., David, R., Lafrance, & S., Cantin, J. (1999). Les technologies de l'information et de la communication en pédagogie universitaire et en formation à la profession enseignante : Mythes et réalités. *Éducation et Francophonie*, Vol.XXVII , N° 1. Available: http://www.acelf.ca/revue/XXVII/articles/Larose.html

Lefoe, G. (1998). Creating Constructivist Learning Environments on the Web: The Challenge in Higher Education, in *15th Proceedings of Australasian Society for Computers in Tertiary Education*. (ASCILITE) Wollongong: Australia. Available: http://cedir.uow.edu.au/ASCILITE98/ascpapers98.html

Little, D. (1996). Learner autonomy and learner counseling. In D. Little et H. Brammerts (Eds.), *A guide to language learning in tandem via the Internet*. Centre for language and Communication Studies Occasional Paper No 46. Dublin: Trinity College.

Long, M. H. (1996). The role of the linguistic environment in second language acquisition. In W.C. Richtie & C. Kramsch (Eds.). *Foreign language research in cross-cultural perspective* (pp. 413-468). Amsterdam: John Benjamins.

Masson, R. (1991). Moderating educational computer conferencing. DEOSNEWS, Vol.1, No.19. Available: http://www.emoderators.com/papers/mason.htlm

Nagata, N., & Swisher, M.V. (1995). A study of consciousness-raising by computer: The effect of metalinguistic feedback on second language learning. *Foreign Language Annals*, 28, 337-347.

Oxford, R. Y., Rivera-Castillo, C., Feyten, & J. Nutta.(1997). Computers and More : Creative Uses of Technology for Learning a second or Foreign Language. *Les nouvelles technologies éducatives dans l'apprentissage des langues vivantes: réflexion théorique et applications pratiques*, INSA de Lyon, Available: http://www.insalyon.fr/Departements/CDRL/computers.html

Proulx, M., & Campbell, B. (1997). The professional practices of faculty and the diffusion of computer technologies in the university teaching. Electronic Journal of Sociology, Vol. 2, No3. Available: http://www.sociology.org/vol002.003/proulx.article.1997.html

St. John, E., & Cash, D. (1995). Language Learning via e-mail: demonstrable success with German, in M. Warschauer, *Virtual connections: Online activities and projects for networking language learners*, University of Hawaii Press.

Tardif, M., & Mukamurera, J. (1999). La pédagogie scolaire et les TIC: l'enseignement comme interactions, communication et pouvoirs, *Éducation et Francophonie*, Vol.XXVII , N° 2. Available: http://www.acelf.ca/revue/XXVII-2/articles/Tardif.html

Théberge, M., & Leblanc, R. (1998). Étude du style d'apprentissage d'étudiants inscrits à un programme de disdactique de langues secondes. *The Canadian Modern Language Review*.55(2), 191-218. Warschauer, M. (1996). Computer-Assisted Language Learning : An Introduction, in S. Fotos (Ed.), *Multimedia language teaching*, Tokyo : Logos International, pp.3-20.

Warschauer, M. (1997). Computer-mediated collaborating learning: Theory and practice. *Modern Language Journal*, 81, pp. 470-481.

Constitution of the Team

- Prof. Gilles Bousquet, UW-Madison, PFMP Director
- Jodi Samuels, UW-Madison, PFMD Assistant Director
- Prof. Aline Germain-Rutherford, Trent University, Ontario, Fr524 Course Designer, Course Coordinator, and lead instructor
- Prof. Marcia Parker, UW-Stevens Point, on-site facilitator at UW-Stevens Point
- Prof. Nelly Halzen, UW-Madison, Fr524 on-site facilitator at UW-Madison
- Prof. Eva Miernowska, UW-Madison, Fr524 on-site facilitator at UW-Madison
- Prof. Philippe Martin, U of Toronto, Ontario, software designer (WinPitchLTL)

Website address of the course: http://frit.lss.wisc.edu/pfmp/indexfrench524.html

Model-Centered Instruction: The Web and Simulation

Andrew S. Gibbons
Instructional Technology Department
Utah State University

Jeffrey D. Willden
Instructional Designer
Weber State University

Several trends are gaining importance for Web-based instruction:

- Instruction should be interactive
- Interactions should be relevant to real performance
- Learning should be situated in realistic settings and circumstances

Achieving this kind of instruction on the Web is a worthwhile goal, but it requires careful design and creative matching of the instructional design to software patterns. Our intention is to provide principles for achieving Web instructional designs that use models as their central structural element.

Model-Centered Instruction

Model-centered instruction attempts to maximize seven basic principles:

- **Experience**: Learners should be given opportunity to interact with models of three types: environment, cause-effect system, and expert performance.
- **Problem solving**: Interaction with models should be focused through carefully selected problems, expressed in terms of the model, with solutions being performed by the learner, by a peer, or by an expert.
- **Denaturing**: Models are denatured by the medium used to express them. Designers must select the level of denaturing that matches the learner's existing knowledge level.
- **Sequence**: Problems should be arranged in a carefully constructed sequence.
- **Goal orientation**: Problems should be appropriate for the attainment of specific instructional goals.
- **Resourcing**: The learner should be given problem-solving information resources, materials, and tools within a solution environment.
- **Instructional augmentation**: The learner should be given support during problem solving in the form of dynamic, specialized, designed instructional features.

Instruction centered around models supports a variety of learner-instructor initiative patterns and is readily adaptable to use in multiple contexts. Models are used in two ways instructionally: (1) to demonstrate an expert acting on the environment and systems within it, and (2), to present problems the student must solve using what has been learned from observing experts. Designing instruction that is centered on models reverses traditional patterns of both instructing and instructional design: traditional *instruction* relies on the presentation of information; traditional *instructional design* emphasizes the design of the presentation. Model-centered *instruction* relies on experience with models; model-centered *design* begins with the model and adds instructional augmentations to it. In the future, the important skills of the instructional designer will probably be the selection, sequencing, and posing of problems, and the selection and representation of models.

Our focus at this point will be how to design using models. We propose four key principles for use by designers.

Key #1: Separate instructional designs from software designs.

Buildings today are designed in layers. Brand (1994) describes how these layers are made independent so that changes to one layer do not necessitate disruptions to other layers. The central layer of a building, of course, is the rigid structure that gives form and stability to the building. Other layers are details imposed on the central structure.

An important goal in instructional design for the Web is to separate *instructional design* from *software design*. Software considerations can be integrated with instructional designs too soon. When this happens, instructional structures are limited by program structures. This is comparable to designing the house to fit the plumbing scheme. Designs improve when instructional issues take precedence. New Web application development tools are making almost any software structure possible. This permits the designer to give first consideration to instructional structures. We suggest that the *model* and the *focusing problem* provide the best inner structures for designs.

Key #2: Maintain focus on the central element—the model.

Three types of model should go into instructional plans: models of *environments*, models of *cause-effect systems*, and models of *expert performance*.

- An **environment** is made up of one or more **locations**. At its simplest an environment can consist of a single location designed to display information in a particular physical computer screen layout. Other environments are made up of large numbers of realistic and connected locations. The key identifying characteristic of a location is not its realism but the fact that it is a place from which the learner can obtain information—most often information relevant to the solution of a problem.

- **Systems** are structures of forces in opposition and balance, elements on which forces act, states, relationships, configurations, transitions, and patterns. Society searches for natural systems through science and invents new ones through technology. When models of systems are constructed, they are expressed through one or more locations of an environment. A model of the stock market may show its output within a single display or through many information-giving locations in the form of rooms, tote boards, etc.. Every modeled system is expressed in some degree of completeness, at some level of resolution, and to some level of fidelity.

- **Expert performance** consists of performance within an environment that acts upon the systems within the environment. Expert performance is structured in terms of goals, actions, motives, decision points, and rationales. **Models of expert performance** are common in our culture and have long been valued for instructional purposes, lying at the foundation of perhaps the oldest, most natural, and most-used instructional method, observation of models.

Key #3: Build the elements of instruction around the model.

Designs should focus on providing the learner with models to interact with of one or more of these three kinds and problems to solve. To create the stage for this to happen, the designer has to consider building any or all of the following (See Figure 1 below):

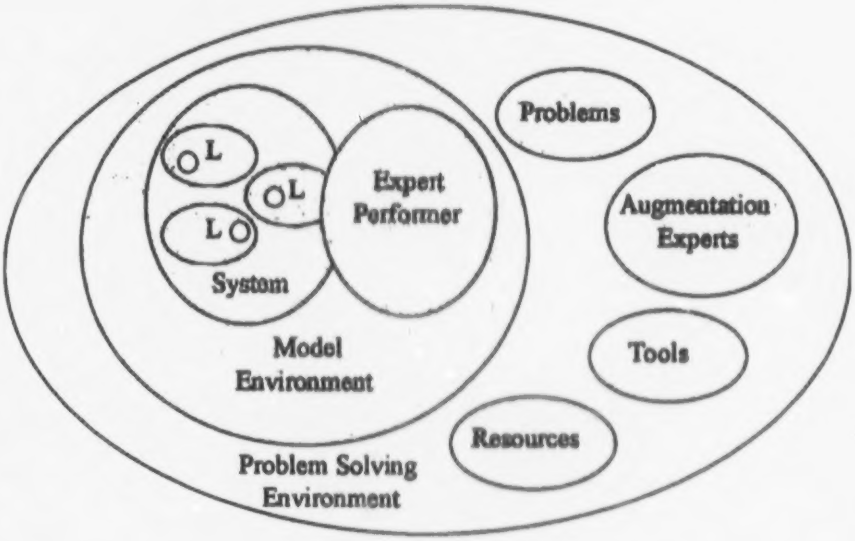


Figure 1. Elements of a model-centered design. [From Gibbons & Fairweather (2000).]

- A *problem solving environment* that contains everything
- A problem *environment* that contains information-bearing locations
- The *paths* for navigating between locations
- *Cause-effect* or *event models* invisible to the viewer
- *Controls* and *indicators* within locations, connected to the models
- One or more *problems* to be solved within the problem environment
- Models of *expert performance* that can be observed
- *Resources* that supply information for use in problem solution
- *Tools* that can be used to generate information or to record information
- *Instructional augmentations* that offer coaching, feedback, interpretations, explanations, or other helps to problem solving.

Not every one of these must be designed in all cases. In fact, simple approaches to each of these is possible, providing model-centered learner experience without the need for sophisticated programming and design expertise.

Key #4: Match a software architecture to your model and instructional design.

Several architectures are useful, and they vary greatly in their sophistication and the demands they place on the designer and programmer. Some are achievable with very simple computer logic. Most can be created as reusable logic templates:

1. **The path simulation** – A sequence of true-false or multiple choice frames that use graphics rather than words to ask the questions. Frames can be sequenced to appear like a simulation. For this reason path simulation is also called "pseudo-simulation". Feedback and coaching augmentations can be built-in to the frame sequence, and the student can be moved from practice mode to instruction mode quickly.
2. **The location simulation** – A problem expressed within an environment of multiple locations where the information needed to solve the problem is embedded within different locations. This type of simulation matches Web page structures closely and can simulate any problem that does not involve the student changing problem values during solution.
3. **The location simulation with models** – An environment that contains models that respond to student input. The inputs are made through *controls* visible within individual locations, and indicators visible within individual locations reflect the model response.
4. **The location simulation with models and augmentation** – Surprisingly simple routines can be constructed to give coaching and feedback. Likewise, sophisticated expert systems can be used for augmentation.

These varieties of simulation combine models of all three types (environment, system, and expert performance). Other combinations made up of the elements in Figure 1 are also possible. A designer hoping to move toward the use of simulations can use the earlier types on this list as training to move toward the more complex ones. If the designer keeps the elements of the design (environment, models, performance experts, instructional augmentation) separate as Brand has recommended, then they can be designed as independent, portable, and reusable modules, and changes to one need not require changes to the others.

References

Brand, S. (1994). *How Buildings Learn*. New York: Penguin.

Gibbons, A. S., & Fairweather, P. G. (1998). *Computer-based instruction: Design and development*. Englewood Cliffs, NJ: Educational Technology Publications.

Gibbons, A. S., & Fairweather, P. G. (2000). Computer-based instruction. In S. Tobias and D.

Fletcher (Eds.), *Training and retraining: Handbook for business, industry, government, and military*. New York: Macmillan Reference USA.

Biographical Sketches

Dr. Andrew S. Gibbons designed industrial training systems for 18 years before entering teaching and research as a faculty member at Utah State University in the Department of Instructional Technology. Dr. Gibbons' work has included building bridges for new designers of computer-based and Web-based instruction, helping them to visualize instruction and product designs in new ways. His work has concentrated on the instructional use of simulations, which has led him to the broader view of model-centered instruction, which is a set of media-independent design principles. Dr. Gibbons is the co-author with Peter Fairweather of the book *Computer-Based Instruction: Design and Development* (Gibbons & Fairweather, 1998).

Address: Instructional Technology
USU
2830 Old Main Hill
Logan, UT 84322-2830
E-mail: gibbons@cc.usu.edu
Phone: (435) 797-2393
Fax: (435) 797-2693

Jeff Willden has developed numerous software programs for computer-based and Web-based instruction at Weber State University, especially in medical areas. Mr. Willden has also developed software for Web-based management, testing, and assessment, including software for managing on-line student portfolios of assignments.

Address: 4005 University Circle
Weber State University
Ogden, UT 84408-4005
E-mail: jeffwillden@mail.com
Phone: (801) 626-6651
Fax: (801) 626-7686

Building Web-Based Instructors: An Analysis of the Selection, Training, Development and Retention of Faculty During a Period of Rapid Expansion

Inez M. Giles, Ph.D.
Director of Instructional Technologies
University of Maryland University College

Thomas G. Thompson
Director of HRM & General Business Programs
University of Maryland University College

Introduction

With the summer 1997 semester, University of Maryland University College (UMUC) offered one Web-based class, Accounting 321. This semester, fall 1999, there were two hundred and fifty-three undergraduate online course sections available to UMUC students worldwide. There are many factors contributing to UMUC's ability to manage the exponential growth in the online environment, some of which include the robust course development process utilized at UMUC, the online student support, including advising and 24/7 technical support, and the faculty selection and training program that has developed. This last factor, faculty management and training, is the focus of this paper. Faculty selection and training for the WWW-based courses overlaps with the strategies used to prepare classroom faculty. A case study approach was used to conduct the study because it permits the exploration of faculty issues within a real-life context.

University of Maryland University College faculty, both graduate and undergraduate, are adjunct practitioners, twenty-five percent of who have taught for UMUC for 10 years or more. These faculty are from a variety of professions including database managers on staff at the Pentagon, tenured professors at colleges and universities in the Washington D.C. area, as well as self-employed consultants and entrepreneurs managing their own businesses. These faculty have one focus in common, they enjoy teaching adult students at a distance. As an aside, with increasing frequency, UMUMC is hiring and training online faculty worldwide.

Distance delivery is not new to UMUC. We began course delivery using the British Open University model in 1972. In support of distance delivery, a team approach to course development was instituted. The course development team included a course author, peer reviewer, editor, and an instructional designer. This team developed an extensive syllabus and other course materials including a comprehensive course guide. UMUC began to offer online courses in 1990 using proprietary conferencing software and course materials developed by the course development teams. As course delivery moved to the online environment, the teams became more technologically oriented and the course materials became less print-based. UMUC recognized early in the process that valued faculty would have to be retooled for the online environment. As Willis writes, "Faculty training is critical to the success of any distance education program" (p.277).

Briefly, UMUC's award-winning faculty development program for the online environment formally began in 1993. From the onset, the goal was to enable the faculty participant to understand the requirements of the virtual environment. Successfully teaching online, especially in the Web environment with the availability of hypertext links, meant faculty had to understand the technical as well as the pedagogical shift that had to be made in their teaching. Faculty had to begin to understand there had been a fundamental change from the instructor-centered to a learner-centered environment. (Willis, Peters).

During the first two weeks of the five-week training session, faculty see the virtual classroom from the student's perspective, and develop what Willis refers to as "an understanding and appreciation for the distant students' lifestyle." (Willis, p. 278). Then during the third week of the training, faculty participants transition to their individual online classrooms, where they begin to develop their course materials and begin in earnest to acquire the skills to teach effectively online. There is a point, hopefully early in the third week that faculty begin to feel comfortable with the concept of technology as the primary mode of course delivery. The training exercises are designed to facilitate faculty understanding of the breadth of resources available to them as they design their individual course exercises and assignments, as well as developing their requisite conferencing skills as moderator facilitating student collaboration (Winiecki).

Some traditional faculty experience mild discomfort at the prospect of losing what they refer to as "the warm fuzzies of the personal student contact" they have come to enjoy. It is only after completion of the training session, and sometimes, only after their peer mentoring segment of the training, do these faculty come to realize the depth of the inter-relationships that take place between student and faculty and among the students themselves. Once faculty teaching online have experienced the depth of the virtual relationships, and comprehend the resultant possibilities, they can begin to more effectively use the Web in the development of course materials, assignments and exercises. One of the core goals of the UMUC training program is to facilitate this understanding.

Members of the faculty receive a summative rating at the end of the five weeks training are either "certified" or "not certified." Only recently have training facilitators begun adding qualitative remarks for directors to use in their decision whether or not to staff a particular faculty member. Faculty preparing to teach online for UMUC can re-enroll in a subsequent training session. Once faculty have completed the five week session, they begin the peer mentoring process, which lasts an entire semester.

To support and sustain growth in online course delivery, UMUC uses a centralized, structured approach in the development of Web-based courses and in the development of its faculty training programs. Faculty selection, quality control in course delivery, ongoing monitoring and ongoing faculty development issues is left to the discretion of the academic discipline directors. UMUC is a full-support distance education institution. This means there is a broad range of institutional, faculty and course support provided to web teachers. (Thompson). The director practices and their course management techniques were the focus of this study. The findings and conclusions and recommendations are discussed in the following paragraphs.

Methodology

The case study approach allows for analysis where the boundaries between the phenomenon and the context are not obvious. Merriam described the rationale for a case study approach:

> A case study design is employed to gain an in-depth understanding of the situations and the meaning for those involved. The interest is in process rather than outcomes, in context rather than a specific variable , in discovery rather than confirmation. Insights gleaned from case studies can directly influence policy, practice, and future research. (p. 19)

The case study is a particularly good means of educational evaluation because of the ability to explore causal links. It is also useful where there are multiple outcomes (Merriam, 1998; Yin, 1994).

A survey was e-mailed to the deans and academic directors. There was one follow up by e-mail to non-repsondents one week after the initial e-mail.

The analysis was performed by pattern matching of the deans; responses with the responses of the academic directors. Where the patterns of director responses match those of the deans, the internal validity of the study is strengthened (Yin, 1994, p. 106).

There were two hypotheses regarding the management approaches used by academic directors. Firstly, the directors from technical disciplines such as computer, business and hard sciences would utilize a more structured approach. The second hypothesis is that the directors shave not refined programs for the on-going monitoring of the web faculty, nor developed mentoring programs.

Findings

The analysis of responses to the survey is organized by the order of question asked. In a qualitative analysis meaning is sought rather than a quantification or tabulation. Listed below is a discussion of the major issues and themes identified by the academic directors as a result of this study.

Identification of Potential Faculty

The most common theme to emerge from the responding directors was that the potential online faculty member should have an identifiable interest in technology, the WWW specifically. One director stated, "We recruit from our better classroom faculty who have shown an interest in web teaching."

Other possible responses to the question of how potential web faculty are identified included; interest in the subject, faculty specifically recruited to teach the online class, web training is required for all faculty. Categories of responses were similar for deans and directors responding to the survey except for the issue of collaborative skills, highlighted by one of the deans, but not mentioned by any of the directors.

Several responding directors suggested that a different approach to faculty training might be appropriate for existing and for new UMUC faculty. In the case of existing faculty, academic directors have an opportunity to make an initial assessment of their pedagogical skills before suggesting the faculty attend the web training. Some directors suggested that the less experienced faculty new-to-UMUC should teach in the classroom one or more semesters before being assigned to a web course.

A significant survey result is that the computer and technical business disciplines ask all new faculty to attend the training session immediately upon being hired. This allows them to build a pool of potential teachers. Other disciplines seem to wait until a course is identified and available for staffing before asking the faculty to attend the training.

Usage of Training Reports on Faculty Performance

Both deans responding to the survey, emphasized that training facilitator reports on faculty should play a large role in the director's final decision whether or not to staff a particular faculty member for a web course. The deans suggested that in instances where there is concern expressed by the trainer, specific follow-up should be made, and perhaps, actual course assignment should be deferred for a semester while additional training is obtained. The practices described by a majority of the directors responding to the survey generally followed these guidelines. A few directors, however, relied upon a pass/fail rating, rather than the facilitator progress assessments. Lack of time to properly digest the remarks was cited in several of these cases.

There are occasions when a conditional-pass faculty will be staffed and assigned a course because of the lack of alternative faculty. Several directors stated that on occasion a faculty who struggled in the training is staffed, and in this case, extra monitoring/ support is provided throughout the semester.

First Semester Monitoring

All but a very few of the directors responding monitor the new-to-web teachers periodically in their first semester of teaching. The remainder of the directors examine the syllabus, the course goals, and outcomes assessment strategies. Use of additional peer monitoring was mentioned by half of the respondents. The deans felt that periodic checks by directors of faculty peers were of critical importance to successful quality control for online courses.

One of the directors describes a six step process for mentoring during the first semester that was significantly more comprehensive that any other directors' approach. One-half of the directors mentioned that monitoring is increased when there is evidence of a problem from any source. Other monitoring strategies mentioned by directors was to follow student evaluations. (It should be noted that a one-semester lag exists between receipt of student evaluations and course staffing.)

On-Going Monitoring Programs

The mentoring efforts in the subsequent semester are generally lightened up unless a specific problem is identified.

Usage of Mentoring Program

Most of the directors surveyed utilize some form and level of mentoring effort. Both deans and directors agree on the importance of mentoring, but there are numerous questions about the availability, compensation and usability of mentors from different disciplines.

Subsequent Web Teaching Assignments

High level of concurrence between deans and directors that monitoring actiivities, mentor reports, student evaluations and self-reports by faculty all have an important role in determining subsequent staffing opportunities for web faculty.

Maximum Number of Web Courses Per Instructor Per Semester

Most directors felt that two web courses were a reasonable limit and if the adjunct faculty member did not have a full time job that three would be ok.. Most felt that there still should be some classroom teaching to maintain a balance. Interestingly the deans were both in favor of allowing four web courses per semester which is the maximum for all delivery formats if not employed full time.

Conclusions

When this study was begun, it was assumed that the Academic Directors for each specialization would manage the hiring of faculty and managing the course delivery process differently. This hypothesis was proven to be the case across some of the hiring, monitoring and course assignment processes identified in the survey. Also, UMUC Directors for the most part monitor their faculty's progress from hiring through staffing and actually teaching online on a semester basis. These are important steps being followed by a few of the academic directors.

In order to better facilitate director monitoring it is recommended that a profile of a "successful" online faculty member be built and distributed to directors during a training session designed specifically to assist academic directors with the management process. Management, working with directors, will have to develop or acquire the resources required to adequately monitor quality online course delivery. Directors should be encouraged to develop a large pool of Web-trained faculty to ensure marginal faculty are never staffed. The on-going mentoring process should be refined and a formalized feedback process should be initiated. Last, policy decisions regarding management of the hiring, staffing and monitoring need to be reviewed and updated

Recommendations for Further Study

Strategies should be developed to improve the response rate and deter mining he nature of the non-repsondents to better manage non-response error Semi-structured interviews with probing should be included to insure that the meaning of responses is better understood.

The questions on mentoring programs and on-going monitoring of web faculty should be expanded so that the perceived needs of the directors are captured.

References

Dillon, C. L., & Walsh, S. M. (1992). Faculty, the neglected resource in distance education. *The American Journal of Distance Education, 36*, 5-21.

Gillespie, K. H. (Ed.). (1998). *The impact of technology on faculty development, life and work.* San Francisco: Jossey-Bass.

Groves, R. M., & Couper, M. P. (1998). *Nonresponse in household interview surveys*. New York: John Wiley & Sons.

Merriam, S. B. (1988). *Case study research in education: A qualitative approach*. San Francisco: Jossey-Bass.

Merriam, S. B. (1998). *Qualitative research and case study applications in education*. San Francisco: Jossey-Bass.

Olcott, D., & Wright,S. J. (1995). An institutional support framework for incleasing faculty participation in postsecondary distance education. *The American Journal of Distance Education, 9*(3).

Peters, O. (1998). *Learning and teaching in distance education*. London: Kogan Press.

Powers, B. (1992). *Instructor excellence*. San Francisco: Jossey-Bass.

Thompson, T. G. (1999). *The Topology of Web-based course development*. Asynchronous Learning Conference, College Park, MD October 7 –9, 1999.

Willis, B. (Ed.) (1994). *Distance education, strategy and tools*. New Jersey: Educational Technology Publications.

Winiecki, D. J. (1999). Keeping the thread: Adapting conversational practice to help distance students and instructors manage discussions in an asynchronous learning network. *DEOSNEWS, 9*(2).

Wolcott, L. L. (1997). Tenure, promotion and distance education: examining the culture of faculty rewards. *The American Journal of Distance Education 11*(2).

Yin, R. K. (1994). *Case study research designs and methods*. Thousand Oaks, CA: Sage.

Biographical Sketches

Dr. Inez Giles, as the Director of Distance Education Technologies for UMUC, developed and manages UMUC's award-winning faculty training program. Four hundred UMUC faculty worldwide have successfully completed this program. Her dissertation, An Examination of Dropout and Persistence in Online, Computer-conferenced Calssrooms won UCEA's Charles A. Wedemeyer award for reserarch excellence. Dr. Giles has presented at several dozen conerences worldwide, and is a published author on faculty training for the online environment.

Address: University of Maryland University College
3501 University Boulevard East
Adelphi, MD 20783
Phone: (301) 985-7770
Fax: (301) 985-7805
E-mail: igiles@umuc.edu

Mr. Thomas Thompson, as the Director of HRM and General Business Programs, is responsible for curriculum development and staff hiring for both online and classroom-based courses. He has been a project manager, an author, and a reviewer for the development of online courses as well as teaching classroom, web-based online, and interactive television courses . His dissertation-in-proccess on the management of web-based course development won the 2000 William Rainey Harper Research Grant Award.. Mr. Thompson has presented at over a dozen distance education conferences

Address: University of Maryland University College
3501 University Boulevard East
Adelphi, MD 20783
Phone: (301) 985-7788
Fax: (301) 985-7021
E-mail: tthompson@umuc.edu

Using the Seven Principles of Good Practice to Evaluate Online Courses

Charles R. Graham
Kursat Cagiltay
Joni Craner
Byung-Ro Lim
Center for Research on Learning and Technology
Indiana University

Thomas Duffy
Chief Learning Officer
UNext.com

Introduction

The Seven Principles for Good Practice in Undergraduate Education (Chickering, 1987;1997) have become a popular set of guidelines for evaluating traditional campus-based courses. These seven principles can also be used to evaluate online courses as well as traditional face-to-face courses. A team of evaluators from the Center for Research on Learning and Technology (CRLT) at Indiana University learned that although the principles apply equally well to face-to-face and online courses, specific strategies for evaluating each principle differed between the two types of courses. This paper is a summary of some of the findings in a more comprehensive CRLT technical report (CRLT, 2000).

Good Practice Encourages Student Faculty Contact

"Frequent student-faculty contact in and out of classes is the most important factor in student motivation and involvement" (Chickering, 1987).

Developing appropriate strategies for creating student-faculty interactions is especially important in an online environment because students do not have the guaranteed contact time that comes from regular class lectures. Conversely, the 24-hour availability of email to students provides a mechanism for interacting with faculty unparalleled in the past. To further complicate matters, we discovered from faculty interviews that instructors were often wary about fostering high levels of online interaction with the students for fear of becoming inundated with email messages or bulletin board postings.

We found that instructors can encourage interaction with students by clearly communicating an email response policy to the students. Students often assume that instructors have easy, constant access to their email. If they contact their instructor and don't hear back within an expected time frame, they may feel that the instructor is ignoring their request. This type of misunderstanding can be reduced if the instructor communicates to the students a general policy or timeline for answering students' email questions. A couple examples of such policies are: (1) an instructor makes it clear to her students that she will make every effort to respond to email within two days of receiving it or (2) an instructor clearly designates three mornings a week that he will respond to email requests. In each case, the communication expectation is set, reducing the chance of students feeling ignored and also meeting the instructor's need to appropriately manage his/her time.

Good Practice Encourages Cooperation Among Students

"Sharing one's own ideas and responding to others' improves thinking and deepens understanding." (Chickering, 1987)

Getting students to discuss issues related to a topic is a typical way for instructors to encourage student-student interaction in the traditional classroom. The use of asynchronous conferencing tools has made discussions an integral part of many online courses. Research exists which claims that asynchronous discussion, while not as good for spontaneous idea generation, is actually superior to face-to-face discussions for generating depth of thought (Mikulecky, 1998). In our interviews with faculty and through observation of the bulletin board discussions in the online classes, we learned that instructors often struggle knowing exactly how to facilitate successful asynchronous discussions to make them.

Developing appropriate discussions that require meaningful peer interaction is one way to encourage cooperation among students. The following set of guidelines developed by the CRLT can be helpful in developing and/or evaluating asynchronous discussions. (See CRLT technical report for more details.)

- Require student participation (make grade dependent on it)
- Students need a task to focus their discussion
- The task should have a product or something that brings closure
- The task should engage the learner in the content
- The discussion structure should be carefully thought out
- Discussion groups should remain relatively small
- Students should get some kind of feedback on the discussion
- Discussions should be evaluated based on quality of content and not length of posting or number of postings
- Instructors should post examples of expectations for discussions

Good Practice Encourages Active Learning

"Students must talk about what they are learning, write reflectively about it, relate it to past experiences, and apply it to their daily lives." (Chickering, 1987)

It is critical to manage active learning, especially in an online situation, because students can be easily distracted from their learning. Without a proper motivation strategy or meaningful tasks, it is hard to engage students in active learning. In the process of evaluating the online courses, we found that there were many opportunities for instructors to help students relate learning activities to real-world issues. For example, in some courses students were asked to do real-world projects that related the course to their full-time work. When the students were allowed some flexibility (e.g., to choose their own topic, project format, etc.) the learning was more meaningful to them and was often more authentic than if the instructor had mandated that everyone do the same project. It is also important for students to present their work to the rest of the class. We found that this is a step that is often skipped perhaps because instructors are not really sure the best way to do online presentations. While formal synchronous presentations may not be practical in an online environment, the project work can be made available for other students to review and specific questions can be formulated to help structure a productive asynchronous discussion about the project or assignment work. Students learn by seeing examples. As they see the exemplary work of their peers (in the current semester or previous semesters) they are motivated to perform at a higher level.

Good Practice Gives Prompt Feedback

"Knowing what you know and don't know focuses your learning . . . students need frequent opportunities to perform and receive feedback on their performance." (Chickering, 1987)

Prompt feedback is a basic tenet of quality instruction. There are typically two main types of feedback used in online courses. "Acknowledgement feedback" confirms or assures the student that some event has taken place. In a face-to-face environment, this kind of feedback happens all the time and is often communicated through non-verbal cues. Acknowledgement feedback is often not readily available to students in an online learning environment. "Information feedback," on the other hand, is informational or evaluative in nature. It is often manifested as the answer to a student question or as an assignment grade and comments.

Most of the instructors for the courses we evaluated gave information feedback on assignments and projects in a fairly timely manner. It is recommended that the turnaround time for giving feedback on assignments should be one week or less. The longer it takes to get feedback the smaller the impact the feedback is likely to have on the student. It is important to monitor bulletin boards regularly and give specific information feedback to students. Instructors may also guide students by asking them questions and encouraging them to find their own solutions rather than just giving them answers to their questions. Although instructors were fairly good at giving information feedback, there seemed to be a lot of room for improvement in providing more and better acknowledgment feedback. Instructors can alleviate many student concerns by sending them a brief note of acknowledgment when they receive an assignment via email. Also, if an instructor is too busy to give a detailed answer to a student question in a timely manner, the instructor should give the student a acknowledgment email stating that they have received the question and will address the question later when they have more time.

Good Practice Emphasizes Time on Task

"Allocating realistic amounts of time means effective learning for students and effective teaching for faculty." (Chickering, 1987)

Learning results from time on task. Students need to know how to use their time well. Especially in online courses, it is hard to maintain students' attention and motivation throughout the semester. Students are easily distracted from their study, so they need to be given help with their time management skills. A student's time on task depends on how demanding the task is and the expectation the instructor sets for working. Most courses we evaluated had assignments with specific deadlines that required students to participate in the class on a regular basis. Having regular assignments due throughout the semester helped to encourage students to spend time on the course and not to procrastinate—which is easy for students to do when they are not meeting regularly with their class. This can be communicated explicitly through email as well as through the structuring and due dates of the assignments. It is important to require students to stay on task and work weekly throughout the semester. Having regular discussions using an asynchronous conferencing tool is a common way of requiring regular participation.

Good Practice Communicates High Expectations

"Expecting students to perform well becomes a self-fulfilling prophecy when teachers and institutions hold high expectations for themselves and make extra efforts." (Chickering, 1987)

The more the instructor expects, the better students perform. Communicating high expectations is important, but is not always easy to implement in an online environment. Without face-to- face meetings, visual cues, or encouragement, online instructors have a greater need to make sure that their expectations are explicitly communicated. Most of the instructors interviewed listed their expectations on their course Web sites. In addition to listing the assignments and their due dates, instructors would often provide grading rubrics for the students. Instructors would also communicate their expectations by publicly calling attention to excellent performance by the students in bulletin board discussions or class listservs. Giving positive attention (when deserved) to the students provides motivation as well as feedback about the kind of excellence that the instructors are looking for. Another strategy for communicating expectations that was used was to model different qualities of postings to the discussion forum. One instructor modeled three postings of different qualities for students to view. One was an exemplary posting while the other two were examples of what not to do and highlighted poor trends she had seen in the past that she wanted students to avoid.

Good Practice Respects Diverse Talents and Ways of Learning

"There are many roads to learning . . . Students need the opportunity to show their talents and learn in ways that work for them." (Chickering, 1987)

Students bring different talents and learning styles to college. Because of such differences, students rich in hands-on experience may struggle with theory and vice versa. Students need the opportunity to show their talents and learn in ways that work for them.

The online course evaluations helped us to identify many different strategies that instructors used to respect diverse talents and ways of learning. Some of the strategies mentioned are:

- Include an online "ice-breaker" activity for online courses to allow students to share their own interests and learn about peers' backgrounds and interests.

- Encourage students to express diverse points of view in discussions.
- Allow students to shape their own coursework by choosing project topics.
- Create learning activities filled with real-life examples and diverse perspectives.

Human Computer Interface Principles

Good human computer interface (HCI) design is one of the core elements that contributes to a positive online learning experience for students. Because students access online course materials through the user interface, its role is very important for a successful course. A poorly designed user interface can get in the way of learning while a well designed interface can enhance the learning experience. For the purposes of our online course evaluations, we looked at four design principles which were selected from a large set of principles from the HCI literature (Nielsen, 1999; Shneiderman, 1998). The features we looked for in the online courses were:

- Consistency of web page layout and design.
- Clear organization and presentation of information.
- Consistent and easy-to-use web site navigation.
- Aesthetically pleasing design and graphics.

See the CRLT technical report (CRLT, 2000) for details regarding the evaluation of each of these features.

References

Chickering, A. W., & Gamson, Z. F. (1987). Seven principles of good practice in undergraduate education. *AAHE Bulletin*, 39, 3-7.

Chickering, A. W., & Ehrman, S.C. (1997). *Implementing the seven principles: technology as a lever*. American Association for Higher Education. Available: http://www.aahe.org/technology/ehrmann.htm

Center for Research on Learning and Technology. (2000). Teaching in a Web based distance learning environment. CRLT Technical Report No. 13-00. Indiana University Bloomington. Available: http://crlt.indiana.edu/publications/crlt00-13.pdf

Mikulecky, L. (1998). Diversity, discussion, and participation: Comparing Web-based and campus-based adolescent literature classes. *Journal of Adolescent & Adult Literacy, 42*(2), 84.

Nielsen, J. (1999). Jakob Nielson's Web Site for usable information technology. Available: http://www.useit.com

Shneiderman, B. (1998). Designing the user interface: Strategies for effective human-computer-interaction. Addison Wesley Longman.

Biographical Sketches

Charles Graham is a doctoral student in the Instructional Systems Technology Department at Indiana University with a focus on distance teaching and learning. He has an M.S. in Electrical and Computer Engineering from the University of Illinois where he helped to develop an asynchronous learning environment used in many of the undergraduate engineering courses. He currently works as a graduate assistant for the Office of Instructional Consulting in the School of Education at Indiana University and teaches classes in the Computer Information Systems department at Ivy Tech State College.

Address: 3131 S. Market Place
Bloomington, IN 47403
E-mail: crgraham@indiana.edu
URL: http://php.indiana.edu/~crgraham
Phone: (812) 323-0979 (Home)
(812) 856-8064 (Work)
Fax: (812) 856-8440

Kursat Cagiltay is a doctoral student in both Cognitive Science and the Instructional Systems Technology Department at Indiana University. His research focus areas are on distance teaching and learning, visual design and cultural aspects of technology. His B.S. degree is from Mathematics and he has an M.S. in Computer Science from the Middle East Technical University, Ankara Turkey. He worked as a project manager to establish Turkish Internet and he is currently technical manager of Turkish Internet top level domain, .tr. He developed a distance-learning environment for graduate students in Turkey. He currently works as a graduate assistant for the Middle East Technical University.

Address: 105 Nutt Apt.
Bloomington, IN 47408
E-mail: kursat@indiana.edu or kursat@metu.edu.tr
URL: http://php.indiana.edu/~kursat
Phone: (812) 857-1676

Joni Craner is a doctoral student in the Instructional Systems Technology Department at Indiana University with a focus on distance teaching and learning. She has an M.B.A. from Indiana Wesleyan University. She has 15 years of educational software development experience for major U.S. publishers. Currently she is a project manager for Internet Learning Forum in the Center for Research on Learning and Technology at Indiana University.

Address: 4518 East Sheffield Drive
Bloomington, IN 47408
Phone: (812) 336-7541
E-mail: jcraner@indiana.edu

Byung-Ro Lim is a doctoral student in the Instructional Systems Technology Department at

Indiana University. His research focus areas are on distance teaching and learning, professional development of teachers, and hypermedia use in education and training. His B.S. degree is from Social Studies and he has an M.S. in Social studies education from the Seoul National University, Seoul, Korea. He worked as a teacher and researcher in KEDI in Korea. He is currently assistant Web master of School of Education, Indiana University. He developed lots of Web sites and instructional models.

Address: 615, Campus View
Bloomington, IN 47408
Phone: (812) 857-7315
E-mail: byunlim@indiana.edu

Professor Duffy is the Barbara B. Jacobs Chair of Education and Technology and the Director of the Center for Research on Learning and Technology. He is the author of over 100 papers and has authored or edited 4 books related to HCI and the design of learner centered environments. He is currently on leave from the University and is serving as the Chief Learning Officer at UNext.com/

Address: School of Education
201 N. Rosem Bloomington, IN 47405
Phone: (847) 405-5009
Fax: (847) 405-5005
E-mail: tduffy@unext.com

Designing a World Wide Web Project Using Streaming Video

Gary Greenberg, President
Videodesk Productions
Dayton, Ohio

What Is Video on the World Wide Web?

Video on the World Wide Web is an emerging technology that uses the Internet to distribute full-motion video and audio programming to personal computer screens. For the purpose of this discussion, I've excluded videoconferencing and other two-way video technologies from the definition of video on the Web. **Streaming video** is the term often used to describe video on the World Wide Web. Streaming is defined as the moving of multimedia files from a server to a user in real time. The project I'll describe in this paper makes use of streaming video technology.

Why Use It?

The fact that a technology exists says nothing about why educators should be interested in using it. But video on the Web is a technology that many educators may want to consider for distance education projects.

Its principal qualification as a tool for education is that it uses traditional video technology and production techniques. Traditional video has a long and well-documented history of success as a learning tool in a wide variety of educational settings. However, teachers and trainers who have used video in the past will have to ask several new questions before they use video on the Web:

- **Does the intended use for video on the Web pass the "better than reality" test?** This measure, coined by Web usability expert Jakob Nielsen, asks the question: Does video on the Web lend qualities to the instruction that cannot be achieved any other way? (Nielsen, 2000)
- **Does the intended use for video on the Web mirror the preferred teaching style(s) of the instructor?** In a video on the Web project, there are really two kinds of learners: the target audience of students and the instructors themselves. For instructors to feel comfortable with the technology, and to keep up with the learning curve involved in using it, they will need a mental model for its use. Video on the Web has the distinction of being usable with many different learning strategies. It can be used in a lecture-oriented style, but it can also be used in demonstration/modeling, guided discovery, and authentic learning styles, as well as others.

Since the instructor is learning about the technology as they use it, choosing a teaching style that feels comfortable will increase their comfort level with using video on the Web.

What Is This Project All About?

Transforming Learning Communities (http://tlc.treca.org) was the title of a media outreach project produced in 1999 by Videodesk Productions of Dayton, Ohio for the Ohio Department of Education's Division of Professional Development and Licensure. The subject matter consisted of an extensive two-year study of school change at twelve schools in Ohio. The research, much of it ethnographic in approach, was coordinated by the Centre for Educational Change at the University of Toronto and enlisted local school officials, local schools of education, teachers, and community members as researchers and authors of twelve case studies on successful school reform. The project revolved around the same, central research question at each school: How do learning communities in schools develop?

Videodesk Productions was hired to create and execute the media outreach plan for the research project. The plan included the use of streaming video, as well as videotape, text, and graphics to produce:

- Five-minute video overviews of three case studies for traditional videotape distribution to small, targeted live audiences.
- World Wide Web text and graphics, including streaming video use of the above video overviews, for distribution to a mass audience of school officials, teachers, parents, legislators, and education decision-makers throughout Ohio and internationally.

What Was the Educational Effectiveness of Video on the Web for the Project?

The educational effectiveness of video on the Web is best realized through a learner-centered project design. This approach also describes successful design for World Wide Web educational projects generally. *Transforming Learning Communities* was not an instructional learning module: its purpose was to use the Web to distribute information to the general public. Still, Videodesk approached the project from an instructional designer's point of view, and I believe that streaming video as a technology has opportunities to promote learning and support learning strategies.

Although streaming video is too new to have been subjected to formal studies of its effectiveness, I suggest that key attributes are its ability to promote learner convenience, learner flexibility, and learner control. In particular, streaming video's ability to be indexed by topic or keyword and then randomly accessed by the learner is an important aid to learner control of the technology. Instructional theorists such as David Merrill have pointed out the importance of learner control as a condition for learning of certain kinds of subject matter (Merrill, 1994). This capability for random access is unavailable to learners who use traditional videotape or audiotape playback.

Videodesk used indexing by topics and by short phrase for portions of the *Transforming Learning Communities* project. Other portions of the Web site contained videos that were not indexed; i.e., they had to be played from beginning to end. User results from the project indicate that learners preferred the indexed video sections and used these parts of the web site more frequently than all other parts. Happily (and by design), these sections of the site contained much of the crucial information on the results of the research and its impact on Ohio citizens.

How Is the Project Doing Today?

In the thirteen months since *Transforming Learning Communities* debuted, it has logged over five thousand visits. Of these visitors, 488 have attempted to watch at least one streaming video clip about the research.

Though these figures are rough, they can be used to make a general cost comparison between streaming video distribution and traditional videotape distribution. Assuming the cost of delivering 400 viewers, the streaming video approach yielded a total cost of $3200.00 for the two-year lifetime of the project. This compares to a cost of $4000.00 for duplicating, packaging (with four-color printing) and delivering 400 copies of a videotape by U.S. mail. (Please note that this comparison does not include the cost of the instructional design that went into the World Wide Web site itself. These costs, some of them directly related to streaming video, were considerable.) Although an "apples and oranges" kind of comparison at present, the above cost analysis will become more relevant as the quality of the video on the Web image improves. This is predicted to happen as schools and homes invest in higher-bandwidth connections to the Internet.

Beyond costs, the project has been gratifying to the client in a number of ways. Because of the "reach" of the Internet onto the desktops of all 612 school districts in Ohio, the Ohio Department of Education can say that it is reaching its entire constituency with the project. The added information that comes from user responses to the site also helps the client understand something about how its materials are being used in the field. All of this information helps the client plan for future electronic outreach projects.

References

Merrill, M. D., & Twitchell, D. G. (Eds.). (1994). *Instructional design theory.* Englewood Cliffs, NJ: Educational Technology Publications.

Nielsen, J. (2000). *Designing Web usability: The practice of simplicity.* Indianapolis, IN: New Riders.

Biographical Sketch

Gary Greenberg, President of Videodesk, has been a developer of broadcast and multimedia programming for twenty years, many of them spent at public television stations. Heading the company and serving as its chief media designer, he holds a master's degree in instructional design. He consults regularly for streaming media projects.

Address: 6 Greenmount Blvd
Dayton, OH 45419
E-mail: videodesk@aol.com
URL: http://tlc.treca.org
Phone: (937) 643-3115
Fax: (937) 293-5851

Transforming Faculty Development Workshops Into Learner-Centered Experiences

Sharon Guan, Ph.D.
Manager of Instructional Design for Distance Education
Indiana State University

Nancy Franklin
Director of Distance Education and Faculty Development
Indiana State University

Melissa Hughes
Program Development Coordinator
Indiana State University

The Course Transformation Academy (CTA) is a faculty development program initiated in 1997 by the Division of Lifelong Learning at Indiana State University. (At the time, the Division of Lifelong Learning was called Continuing Education and Instructional Services.) Offered to the university community on a semester basis, the CTA aims to prepare faculty members to transform their courses for distance delivery. It has been 3 years since the program began, during which time the technology has evolved drastically, as have the instructional methods and techniques for distance teaching. In response to the technical and the pedagogical evolutions in distance education, the Course Transformation Academy was confronted with the need for its own transformation.

The Course Transformation Academy was originally conceptualized in the Spring of 1997 as a 12-week series of workshops focused on learning about and experiencing four aspects of course transformation: media technologies, student issues, teaching strategies, and course content design. Major topics addressed in each of these areas included:

- *Media Technologies*: experiencing from a student's hands-on perspective satellite television, audio conferencing, Internet listservs and chats, WWW home page creation, videotaping, introduction to graphic design, file transfer, and web surfing
- *Student Issues*: our target student population characteristics, adult learner needs, distance education persistence characteristics, learning styles
- *Teaching Strategies*: Grasha's four teaching styles, identifying teaching style and preferences, distance education teaching tips and techniques
- *Course Design*: instructional design overview, assessment techniques, media development resources, library and computer services considerations, faculty pioneers

It was found that faculty participants were exposed to lots of ideas, considerations, and strategies, but these pieces were not connected in ways that were immediately usable. The plan called for each faculty participant to work with our CTA instructor team (consisting of 6 people from Continuing Education, Center for Teaching and Learning, Faculty Computing Resource Center, Media Technologies & Resources, and Distance Education) at the conclusion of the CTA to think through their particular course design issues. However, no structure was in place to facilitate very effectively the construction of the courses. In the meantime, more and more distance courses were in demand by the DegreeLink Program—a partnership between Indiana State University and two community colleges that offers time and place-bound holders of associate-degrees an opportunity to complete a baccalaureate degree via distance education.

As more and more faculty moved toward asynchronous modalities – particularly the Internet – for course delivery, it became increasingly important to provide them with models of course design. The request from faculty members was clear and definite: Show me a good online course! This "show-me" request reflects the fact that most teachers teach the way they were taught, yet with one or two rare exceptions, none of the faculty participants had ever taken a web-based course so had few reference points from which to construct their own course.

While struggling with the new tools for teaching and learning, faculty members are seeking models to guide them through the design, the development, and the implementation of online courses. To meet such needs and to deal with scheduling conflict, the Spring 2000 CTA was offered in the form of a distance course that combined on-site meetings with mediated instruction consisting of video and the Internet. The course, titled "Course Transformation Academy 101" offered the enrolled "students" (33 faculty members from 17 disciplines), a model of a learner-centered teaching approach in a mediated learning environment. The construction of Spring 2000 CTA reflected the belief that faculty development program should provide as much experiential learning as possible.

An Overview of CTA 101

The Spring 2000 Course Transformation Academy or CTA 101 ran for 11 weeks from January 28 to April 14. The course was offered with a combination of synchronous and asynchronous modes: a two-hour on-site meeting was scheduled every other Friday; online instruction was provided in the alternate weeks. Technology workshops were offered during the asynchronous week for faculty participants with relatively low technical skills. The instruction time and the intensity of the content were equivalent to a 3-semester-hour classroom-based course. The only exception was that instead of a letter grade, those who successfully completed the course were offered a stipend of $500 by the Division of Lifelong Learning. A successful completion of the course was measured by attendance at the on-site sessions, the participation in online discussions, and the outcomes of the course project.

The instructors for CTA 101 consisted of an instructional consultant, an instructional designer, an educational expert from the Center for Teaching and Learning, and a Distance Education librarian. A program coordinator was assigned to assist in the implementation of the program. This person's responsibility included arranging pre-and-post session meetings of the instructors, organizing on-site class meetings, tracking attendance and assignments, and processing payments.

The content of the course had three strands: pedagogy, instructional design, and technology usage. In the teaching methods part, a series of learning models were introduced to the course participants including a Deductive Model, an Inductive Model, an EDICT Model, a Boy Scout Model, a Kolb Model, an Experiential Learning Cycle, a SHOWeD, and a Deweyan Model. The participants were asked to: 1) identify their instructional patterns, 2) consider their teaching goals, 3) review their instructional patterns, 4) create patterned instructional plans, 5) understand students' learning patterns, and 6) match their teaching patterns with students' learning patterns. The goal of the pedagogy sessions was to promote effective instruction by enhancing the instructors' teaching skills. The teaching related content was presented through lectures, on-site exercises, online reading materials, and group discussions.

The instructional design portion of the course covered the issues of learner analysis, media selection, assessment, course management, and interactivity. The majority of the content was covered by modeling activities such as online surveys, announcements, quizzes, emails, discussion boards, and group pages. Instructional design tips for each area were documented at the course web site.

The technology usage portion of the course was presented by using video demonstrations, instructional manuals, help aids, and hands-on workshops. The goal of this portion of the course was to acquaint faculty participants with "CourseInfo," the courseware package adapted by Indiana State University for online course development.

The Learner-Centered Approach

"There is no such things as effective teaching in the absence of learning" (Angelo & Cross, 1993). In the traditional classroom, instruction needs to be centered on the learners to attain maximum effectiveness. The same thing is true with distance education. In modeling the learner-centered approach, the following items were used in CTA 101:

- A Course Introduction Packet
- A Learner Analysis Survey
- Needs Assessment Surveys
- A Self-Selected Project
- Multiple Access to Training and Materials

The Course Instruction Packet

The first CTA session was offered in the asynchronous mode. The reason for doing so was to give the CTA participants (the potential distant instructors) a better understanding of the frustrations distance students face at the beginning of a semester: How do I register for the course? Where do I find the site? How do I login? What kinds of equipment will I need for the course? Who can help me with the problems?

Answers to these questions were presented in a course packet that was mailed to the "students" at the beginning of the semester. Included in the packet was a videotape, technical help aids, a course syllabus, the first-week's assignments, and handouts. A 10 minutes video orientation walked the participants through the content of the course, and introduced them to the instructors, the procedures for access, and the technical support and resources. From the instructional design perspective, the video modeled a starting procedure for a solely distance-based course.

The Learner Analysis Survey

One of the first-week's assignments for the CTA 101participants was to fill out an online survey. The survey contained 21 questions regarding the participants' prior experience with distance education, their reasons for choosing to take the course, their expectation for the course, their technical skills, their computer hardware and software setups, and their needs and requests for the course. The goal of the survey and its statistical results were shared with the participants at the on-site meeting in the following week. At that time, more methods were introduced to the participants including demonstrations of ways of creating student homepages and of opening a self-introduction forum on the discussion board.

The Needs Assessment Surveys

An online survey was posted every other week on the CTA 101 web site to check how "students" felt about the course and to gather their comments about the content and the instructional methods used in the previous weeks. The survey consisted of no more than five questions including a forecast for the coming week and a query about what were the students' expectations for the next topic. For instance, if the following week would be dealing with distance library resources, the participants would be asked to describe what they would like to know about library resources and how they would like to use them. These mini surveys demonstrate a tool for formative evaluation, which is a critical element for web-based instruction.

The Self-Selected Project

During the first week of CTA, each participant was asked to recall an instructional problem he/she had encountered and to described it on the instructional problem form. The forms were then collected by the instructors who would help analyze the problems and seek technical or instructional design solutions. The project for the course would be focused on the instructional problems. The design of the assignment reflected Kolb's learning model in which students are asked to bring into the learning process their real life experiences. The assignment enabled faculty participants to connect technology with their teaching methods.

The Multiple Access to Training and Materials

The CTA course materials were made available in multiple formats and could be obtained through multiple channels. CTA 101 participants could obtain hardcopies of course materials during the on-site sessions; all files were also stored in the course web site in Rich Text, Word, and HTML formats. Since the technical skills of the participants varied, technology workshops were optional. The content covered in the workshops were all documented on the help aids forms and in instructional design tips. Those who could not make it to the workshop could contact the coordinator for a make-up session or they could practice at their own discretion following the instructions in the help aids. Faculty members could also use the help aids for their own web courses. Again, the files were available for downloading from the CTA 101 course web site. The modeling of multiple access showed faculty members that the more options given to students, the less frustration they would have.

Action Design: Problems and Solutions

Deprived of the opportunity for impromptu wit and revision, distance courses require detailed planning. Yet, there are always things that cannot be planned – such as the enrollment. There has been a fierce debate among distance education theorists and researchers on faculty-student ratio for web-based courses. Since interaction directly influences the effectiveness of the learning, the size of the class should be set to allow sufficient interaction between instructors and students. In reality, however, most web course instructors have to predict course enrollment based on their experience in the traditional courses; the number, certainly, is seldom the same.

This problem occurred in CTA 101. The enrollment of the previous CTA programs ranged from 6 to 15. The Spring 2000 CTA was therefore planned to accommodate somewhere around that number of students. It turned out, however, that 33 faculty members signed up for the course. Although 5 of them decided to drop out due to time conflicts or for other reasons, the course still ended up with 28 participants. The problems caused by this unexpected enrollment surfaced right at the beginning of the course: the first online discussion forum was flooded with 69 messages; some messages contained questions for the instructors. None of the instructors, however, could fully devote his or her time to respond to those postings. In fact, every CTA instructor had a full-time job to handle in addition to his/her CTA duties; even if there had been only one designated instructor, 69 messages was still too heavy a workload for one course.
Another challenge raised by the unexpected enrollment concerned was the project, which had originally been designed to be conducted individually by each participant. To do that, each participant would schedule a real or virtual meeting with the instructional designer to discuss his or her instructional problem. Twenty-eight "students" made it impossible for the scheduling of such individual appointments.

To solve these problems, the CTA instructors decided to use a grouping strategy. Based on their background (discipline and major field), CTA "students" were divided into 5 groups. The members of each group took turns at being the starter and at being the wrapper of their discussion. The starter was in charge of initiating discussions on the reading assignment, while the wrapper would post a report for the whole class to see. Group discussions were conducted in the Group Pages area in "CourseInfo" and the final reports were posted on the Discussion Board for the whole class to see. For the instructional problem project, discussions of each member's instructional problems were carried out in a group discussions. The group would then choose a topic of common interest to be the topic for the group project. The group strategy did not leave the instructors out of the game. In fact, the instructors played an important role in monitoring the process and in providing ideas, directions and suggestions for the discussion and the projects.

This experience of "action design" taught both the instructors and the participants of CTA some very good lessons about managing online courses:

1. Always prepare a plan B, and sometimes even a plan C, for any activities for the course;
2. Use group strategies for bigger classes and oversee the progress of group projects;

3. Understand that putting all the information on the web does not complete the construction of a web course; managing the course and enhancing the interactivity are far more important.

Summary

By transforming faculty training workshops into a learner-centered experience, the Course Transformation Academy aims at modeling an active learning approach for faculty members. As a course, Spring 2000 Course Transformation Academy provided the participants an opportunity to experience what their students later would experience. It encouraged faculty members to think from the students' perspective in designing their online courses. Ninety percent of the participants completed the courses with their prototyped lesson plan and a presentation of the group project. In the final evaluation, 27% of the participants would give themselves an A for their performance in the course; 72% put themselves in a B level; and the rest did not pick any grade.

Although the overall evaluation was very positive and encouraging, for the enhancement of the faculty development program, the following suggestions and recommendation from the participants are still quite valuable:

1. Pedagogy, instructional design, and technological usage should be well blended;
2. Teaching theories should be presented through concrete examples instead of lectures (a web course that reflects and is based on what a teaching pattern tells interests the faculty members more than the theory itself);
3. The time for the course should be concentrated instead of being allowed to expand throughout the entire semester;
4. The course should bring in more experienced faculty members to showcase their courses.

Biographical Sketches

Sharon Guan, Ph.D. is the manager of Instructional Design for Distance Education at Indiana State University. She manages the Instructional Design Unit and assists faculty members to transform their courses for distance delivery through training programs and consultations. Her research interests include interpersonal need & interaction preferences, web-based assessment, and Electronic Performance Support System.

Address: Erickson Hall, Room 236
Indiana State University
Terre Haute, IN 47808
E-mail: extguan@ruby.indstate.edu
URL: http://isu.indstate.edu/sguan
Phone: (812) 237-8718
Fax: (812) 237-3495

Nancy Franklin is the Director of Distance Education and Faculty Development at Indiana State University. In this role she provides leadership to distance education program and course development and delivery; ISU's Faculty Computing Resource Center; and a FIPSE Learning Anytime Anywhere Partnerships grant development team. She has been at ISU for 4 years, initially focused on DegreeLink, a 2+2 distance education initiative. Previously, she coordinated the Faculty Development Institute at Virginia Tech, authored a book for Indiana University on Distance Education implementation, and held several positions in computer and elecommunications marketing and systems engineering for IBM and ROLM Corporation.

Address: Erickson Hall, Room 238
Indiana State University
Terre Haute, IN 47808
E-mail: extfrank@ruby.indstate.edu
Phone: (812) 237-8452
Fax: (812) 237-3495

Melissa Hughes is the Program Development Coordinator for Distance Education in the Division of Lifelong Learning at Indiana State University. Her responsibilities include program and course development, distance education faculty compensation, and coordinating distance education faculty development programs.

Address: Erickson Hall, Room 243
Indiana State University
Terre Haute, IN 47808
E-mail: exthugh@ruby.indstate.edu
Phone: (812) 237-2027
Fax: (812) 237-3495

There's Nothing Virtual About It

Darcy Hardy, Director
Marta Hubbard, Policy Coordinator
Rob Robinson, Technology Coordinator
Jennifer Rees, Marketing/Communications Coordinator
Lori McNabb, Curriculum Coordinator
Susan Smith, Student Services Coordinator

UT TeleCampus
The University of Texas System

U. T. System and the UT TeleCampus Overview

The University of Texas System has been meeting the educational needs of students for over 100 years. The current 15 component institutions, with 150,000 students, have provided opportunities to expand horizons in a world that is faced with and embracing an information technology revolution. Today's information technology and instructional telecommunications enable the U. T. System to extend its collective educational reach to students in Texas and beyond through the UT TeleCampus, an Internet-based central support unit for distance education. (www.telecampus.utsystem.edu)

The TeleCampus shatters the paradigm of "virtual" universities that put up courses first and then consider the support services (digital libraries, admissions and registrar links, advisement, financial aid, etc.) necessary for the success and survival of the distance learner. The TeleCampus site has a monthly average of 14,000 individual users. While users are predominantly from Texas, more than a dozen countries are represented, creating a truly global campus. These learners are racially diverse, of various age groups and varying demographics. In making a "wall-less" university, K-12 through retired citizens are finding access to higher education services at their fingertips, and will be more likely to continue their own education.

Because of this "service first" approach, the TeleCampus has built a strong support foundation that allows for course and degree offerings to be added successfully and intelligently. This, coupled with the personal accountability and service-oriented philosophy that comprises the TeleCampus and its staff, ensures the distance learner every available opportunity to succeed, even in situations of extreme geographic isolation from a traditional campus.

This paper will discuss the different service areas that act as the functional elements vital to the success of the UT TeleCampus. As anyone who has gone through the process of creating a "virtual" campus knows, there is nothing "virtual" about the day-to-day procedures necessary to have a successful operation. The service areas that will be considered are Policy, Technology, Marketing and Communications, Curriculum Development, and Student Services.

Policy

Policy refers to the management of consistency and operational issues required by the UT TeleCampus to offer a superior product to U. T. students. Many policy and legal issues are inconsistent across the U. T. System component institutions, and the TeleCampus plays a major coordinating role in facilitating common policy development and communicating these policies to students, faculty, and administrators. Policy crosses all areas of the TeleCampus. Administration, Services, Curriculum Development, and Copyright and Intellectual Property issues are all functions that are part of the policy service element. We must be aware of System, individual institution, and state policies concerning distance education. Component collaboration, accreditation requirements, and tuition and fees for distance education are all areas to be considered. Committees related to specific degree programs have been formed to deal with quality control issues and policies. These committees are made up of deans and faculty members. They meet regularly to develop policy, review faculty credentials, and to evaluate the courses.

Creation of agreements for the development of courses for the collaborative degree programs is important to the success of the TeleCampus. These agreements have to satisfy the needs of the faculty members, the institutions hosting the courses, and the TeleCampus. Intellectual property, copyright, design, and the period of commitment are all areas that must be covered by the agreements. The TeleCampus has been approached by a number of outside agencies, and agreements are being created to meet the needs of all of our partners.

Technology

The UT TeleCampus technical infrastructure is an evolving environment. The current system provides the groundwork for the TeleCampus web environment, excluding the courses themselves. We are on an ambitious growth curve, and in the next year we will be implementing the following projects:

- Upgrade of network infrastructure: Will include moving the TeleCampus servers into a hardened network configuration and increasing the available bandwidth by ten times.
- Streaming media support: Will begin central hosting of a RealMedia server.
- Broadening the portfolio of courseware we support: Will begin hosting courses on WebCT in addition to the VCampus platform.
- Central data hub: "Meta-Student Information System (SIS)" which will allow data to flow between and among the component institution's various student information systems.

Each of these projects entails technology and requires the involvement of multiple players. The role of the TeleCampus technology staff is to build and support tools that will allow us to better achieve our mission of delivering quality education. In the beginning years of operation, the TeleCampus relied heavily on partners, both inside and outside the U. T. System, for technical support. As we grew, we added technical staff and are beginning to take more control of the day-to-day operations.

The central data hub is a key component in our ability to scale up to the number of students expected in the future. There are inherent difficulties when offering student services in a multi-campus consortium, as participating institutions become either a "home" or "host" campus for a student. The duties and responsibilities vary based on these roles, but the efforts of both home and host must be coordinated. Currently, each component operates in an autonomous mode, resulting in very little component-to-component information flow. This lack of a coordinated support system means that distance education students may suffer when compared to the on-campus student in terms of accessible services.

The TeleCampus is building a centralized data "hub" in this "wheel-and-spoke" configuration. It will allow each component institution to more easily register, admit, advise, and monitor progress of these cross-component students. Batch feeds will be built into the system from each component institution SIS, along with a "My TeleCampus" student interface. This will enable a one-stop-shop for the pertinent, personalized information a student might need.

Marketing and Communications

The initial marketing and communications efforts for the UT TeleCampus and its launch programs, the MEd and the MBA, required a stair step approach with information dissemination. Prior to promoting an MBA Online, we had to publicize and promote the value of online education in general. Online delivery was fairly new to Texas (our initial target market). The few who had some familiarity with the concept often mistook our unique model for something else entirely.

In the early stages of development, there were many perceptions about what the TeleCampus was and why it was created, with very little truth at the core. So, while our marketing and communication efforts officially began in the Spring of 1999 for the Fall 1999 semester, it was not possible to use this limited window of opportunity to promote our new online programs. Instead, it was necessary to invest in a sort of social marketing rather than product marketing and to define the true nature and mission of the TeleCampus prior to discussing the value of online learning. Once that was achieved, we could discuss the value of online education, and then effectively begin program promotion.

Prior to educating any external media and audiences, we had to start internally. The UT TeleCampus was still in its infancy and many of the staff and faculty of the component institutions were concerned about their pre-existing autonomy with online delivery. Additionally, key information contacts for each program had to be identified from within this viable but loose federation of institutions. And this information had to be posted to centralized webpages for prospective students and media to see.

Several audiences were identified for initial information campaigns. Internal audiences were reached via print pieces, email, press releases, and ads in student papers identifying the TeleCampus as a central support unit. Work was conducted to ensure the faculty and staff of the component institutions did not perceive the TeleCampus as a threat or competitor for enrollments. Marketing and Communications mystery shopped the institutions to see what the perceptions were of TeleCampus programs at the participating campuses and to see where information had reached the desired end audience.

With internal audiences in place, external relations could begin. Media were selected first by regional affiliation with existing campuses, then branching out to the smaller publications in outlying areas. Additionally, careful consideration was given to ensure all known minority publications and higher education publications were included. Advertisements were carefully placed in select publications after scrutinizing reader demographics.

The goal was two-fold in that the TeleCampus wanted to attract qualified students to the programs, but also recognized that it must first attract the general public to the site. By Fall 1999 more than 15,000 people had visited the site. In the process we isolated a qualified cohort of first semester students for our program launches.

Curriculum Development

In developing offerings for online learners, we have worked to create a faculty-focused support system that encourages the establishment of a community of online teachers and learners. Our guiding principle has been the belief that online education can and should be student-centered. This has led to several underlying principles that have directed our efforts:

- The System's most valuable resource is faculty members and the knowledge and experience they provide.
- During course development, faculty should be allowed to focus on pedagogy and content.
- During course instruction, faculty should be allowed to focus on student learning.

With fifteen component institutions, there are essentially fifteen models for course development. As a service entity, our role is to encourage the creation of a course development infrastructure at each component, while overseeing on-going course development. As support for course development varies widely within the System (and faculty needs vary as well), our support varies so that each faculty member is provided with the resources they need.

The TeleCampus provides funding to faculty for course development. In most cases, those monies are used for faculty release time (one semester during course development and/or the first semester teaching), on-site production support and travel for training.

Faculty who receive TeleCampus funding are required to hire production support personnel. We work to train both the faculty member and support personnel, to encourage a partnership within that development team and to provide whatever course development support is needed and not available within that team or otherwise available to the faculty member at the component institution.

Curriculum staff at the TeleCampus provide faculty and production staff with group and one-on-one training. They provide course development advising; this may range from help in identifying appropriate technology to meet the faculty member's instructional goals, to direct involvement in course and content design. Based on the experience and skills of the faculty's team, TeleCampus staff may provide instructional design, graphic arts, multimedia production, project design or advanced html services.

Once a course has been developed and has been deployed for instruction, faculty are provided with a second "copy" of their course on a development server so that they may revise, update and improve their course for the next semester they will teach online. This provides for continuous improvement and refining of the course as the faculty member better develops their online instruction and class management. We work to create lines of communication between and among TeleCampus faculty. This helps them to mentor and learn from one another and jointly develop class instruction and management techniques.

Student Services

Registration. Students wanting to take UT TeleCampus courses are required to register with the U. T. System components hosting the courses. To ease the admission and registration process, the TeleCampus has devised an Inter-Institutional Distance Education Admission and Registration (IDEAR) form. Through the IDEAR form, the campus registrars share information regarding student records so the students are not required to submit applications, transcripts or test scores to each campus. The Central Data Hub mentioned above in the Technology section will allow campuses and the TeleCampus to share student record information. The IDEAR form will be electronic and part of that system. Each component has a specific admissions/registration contact for distance education students.

Library services. The U. T. System Digital Library (UTSDL) (http://www.lib.utsystem.edu/index.html) provides students with most of the academic resources they need to be successful in their courses. The UTSDL is designed to support all students in the U. T. System, however its services are particularly useful for distance education students. Because not all of the institutions can individually acquire the resources needed for the collaborative programs, the TeleCampus has purchased licenses for important resources. TeleCampus students can access these resources from anywhere through a proxy server. Providing resources in this way allows the U. T. programs to offer quality academic support services, regardless of an institution's ability to purchase them. Resources for new programs are purchased upon the recommendations from the program committees. All students participating in TeleCampus courses have access to all of the resources. The UTSDL website contains a dedicated page to TeleCampus resources and instructions for creating accounts on the proxy server. Each U. T. institution has a specific library contact for distance education students.

Call Center. As the number of programs and students increases, the TeleCampus will develop a call center to handle public inquiries. Customer service is important for having satisfied students, and we believe in a high-touch, personal approach to helping them.

Program Websites. In order for students to be able to participate in higher education courses and programs from a distance, they need to have complete, accurate information. We work diligently to provide as much information on the Web as possible to allow students to make informed decisions about the programs. In the collaborative programs, each component institution is required to have its own website containing pertinent campus information regarding admissions (including web-accessible applications), registration, important dates, and degree plans. Every institution is required to have a designated advisor in each online program for the distance education students.

Conclusion

In conclusion the staff of the UT TeleCampus have worked hard to accomplish our mission of collaborating with the U. T. System institutions to provide high quality distance education programs and services in an affordable manner to the citizens of Texas, the nation, and the world. By providing faculty, students, administrators, and staff involved in distance education with the opportunity to have the services and quality education that is expected from a world-class university system, the UT TeleCampus has extended the educational opportunities available through The University of Texas System.

Biographical Sketches

Dr. Darcy Hardy is Director of the UT TeleCampus, the virtual university of The University of Texas System that supports distance delivery of academic programs from all U. T. component institutions. Dr. Hardy has been involved in distance education since 1989, and has participated in the design, development, delivery, and evaluation of programs delivered via print, audio, computer and/or video. She was a founding member of the Texas Distance Learning Association and is a past president of that organization (500+ membership). She serves on the Distance Education Advisory Committee for the Texas Higher Coordinating Board, is Vice President for Membership and member of the Board of Directors for the United States Distance Learning Association, and is secretary and member of the Board of Directors for the Texas Association for Educational Technology. Dr. Hardy is also a commissioner in the University Continuing Education Association.

E-mail: dhardy@utsystem.edu
Phone: (512) 499-4213

Marta Hubbard has worked for The University of Texas System for over twenty years. She was one of two original employees of the Office of Information Technology and Distance Education. She is currently the Policy Coordinator for that office and the UT TeleCampus. Marta has been working in issues involving information technology and distance education for over five years. She is the Secretary for the Texas Distance Learning Association. She received her undergraduate degree from The University of Texas at Austin.

E-mail: mhubbard@utsystem.edu
Phone: (512) 499-4212

Rob Robinson is the Telecommunications Coordinator for the Office of Information Technology and Distance Education. He also has the role of Technology Coordinator for the UT TeleCampus, where he is responsible for overall technical architecture. Current projects include building a unique student information system to handle the inter-institutional distance education student. Rob has 15 years of experience in higher education and state government telecommunications and network operations departments. He has a BS in Communications from The University of Texas at Austin and is currently pursuing an MBA.

E-mail: rrobinson@utsystem.edu
Phone (512) 499-4397

Jennifer Rees, Communications and Marketing Coordinator for the UT TeleCampus, brings experience in writing, advertising placement and design, media relations, and marketing research and analysis to her position with the U. T. System. She acts as in-house agency for the UT TeleCampus providing marketing and communications tools to support the TeleCampus and the promotion and development of its online degree programs. Rees has experience in higher education, having worked in alumni relations, public affairs, and news and information offices of universities.

E-mail: jrees@utsystem.edu
Phone: (512) 499-4409

Lori McNabb is the Curriculum Coordinator for the UT TeleCampus. She is responsible for course development, faculty relations, course scheduling, and faculty and production staff training. In addition, she oversees the in-house course development support provided by the TeleCampus to faculty. Lori has extensive experience in not-for-profit and higher education management. She earned a BA in Economics at St. Edward's University and is currently pursuing an MBA at her alma mater.

E-mail: lmcnabb@utsystem.edu
Phone: (512) 499-4768

Susan Smith is the Student Services Coordinator for the UT TeleCampus. Among her responsibilities are overseeing students' registration into the online courses, facilitating access to library resources, managing student records and providing information to the public regarding TeleCampus programs and courses. Susan has over 15 years of counseling experience and has worked in the U. T. System for ten years. She has a BA in Psychology and an MEd in Higher Education Administration from The University of Texas at Austin.

E-mail: ssmith@utsystem.edu
Phone: (512) 499-4292

Address for all of the above:
UT TeleCampus
The University of Texas System
201 West Seventh Street
Austin, TX 78701-2981
Fax: (512) 499-4715
URL: http://www.telecampus.utsystem.edu

Captivating Your Audience From a Distance

Londa Horton, President
Strategic Solutions Consulting, LLC

Karen Haywood, Training Manager
Maritz Performance Improvement Company

Putting the "Zing" in Learning

We know that participant attention is at its peak in the first ten minutes of a distance learning event. Therefore, looking for ways to create a strong, memorable opening that captivates their attention, sets the mood for the rest of the course. Most of us as learners decide to "tune-in" or "turn-out" at that critical juncture in the course. Another key ingredient in the opening is to set the stage for participant interaction so that passivity does not become the mindset of the learners. This session promises to make a lasting impression on how you design future distance learning events by captivating and actively engaging your learners from the initial opening of your course.

Basic Premises

As pioneers in the industry of satellite distance learning in the automotive business, we have found four key premises to be pretty basic in designing successful programs. Without all of these four variables working in congruence, our evaluations reflect less than stellar performance. And after all, who is a better judge of a program's success than our recipients!

Instructional Soundness

Courses must be designed with a purpose that targets our audience, with objectives that delineate "fluff" from critical learning points, with a lead-in describing **What's In It For Me**, and with immediate application methodologies. Too many courses flood the airwaves filling up time with nice-to-know information. Today's learners neither have the time, energy, nor interest in the course designs of the heyday. They must be succinct, to the point and relevant. Therefore, asking learner response questions that unveil new knowledge can be a competitive advantage when time is a premium.

Credibility of Instructor

Acting talent conducting interactive distance learning courses as well as starring in video vignettes are not perceived as credible by their audiences. Course material has a much wider acceptance if the instructor is perceived as a credible expert. Be it a service technician, sales consultant, business office manager, lawyer, etc., due to the fact that learners are geographically separated from their host site, they tend to challenge and confront instructors who do not project this image of a credible expert. Therefore, using subject matter experts to conduct distance learning classes can directly impact learning.

Early Participant Success

Television is a passive medium. We have been conditioned to watch, listen, and sit still until commercial breaks signal us to talk. Overcoming this conditioning can be difficult unless perimeters for course interactivity are established immediately. We deal in such a high volume turnover population in the retail auto industry, that new learners to the distance learning medium can be found in most courses. Therefore a need exists to assist them in overcoming any inhibitions they might have with using new technology. To meet this challenge, we get them talking right off the bat. By asking anonymous, opinion questions, each learner can "flag" their responses and immediately get feedback displayed with on screen histograms to see how their peers answered. Next, multiple choice questions designed so that the easiest question is first, elicit responses that builds learner confidence and sets the stage for future interaction throughout the course.

Motivating Environment

By creating a learning environment where all opinions are harbored and welcomed, where all the senses are tapped, where individuals are actively engaged in their own learning, and where their previous experiences are drawn upon, it energizes learners to acceptance of your message. Make an impression, recharge their energy and you will connect to your learners on a new level.

Dramatic Openings

Hold your distance learning audiences in the palm of your hand by creating dramatic memorable, openings. Use those opening, twenty seconds on air to create a theme for your course that is carried throughout its duration, tying critical messages together and closing with a resounding, dynamic conclusion. Think of the captured soldiers in the renowned movie, "Bridge Over the River Kwai," as they whistled their way to work. It is hard for anyone to leave that movie without whistling their song. What a dramatic and lasting conclusion. Don't you wish you could get your learners tapping their toes and stretching their attention span? Join this session to learn how you *can* captivate your audiences from a distance.

Biographical Sketches

Londa Horton is the President of her own training and consulting business, Strategic Solutions Consulting, LLC. Her passion for using technology to motivate learning has put her at the top of her field as a respected expert in distance learning. Her background includes a Master's Degree in Educational Psychology as well as an instructional design position with Ford Motor Company where she won the coveted U.S. Distance Learning TeleCon Award in 1996 for Best Design of a Satellite Broadcast. Then as the Director of Distance Learning at Maritz Performance Improvement Company, Londa identified implementation issues during the launch of the General Motors University Distance Learning network. To her credit, Londa went on to win the 1999 ONE TOUCH Award for Best Soft Skill training for the design of the GMU Vehicle Selling Skills curriculum. She also consults with Volkswagen in the implementation of their new VW Max distance learning network.

Address: 6659 N. Gregory Rd.
Fowlerville, MI 48836
E-mail: lhorton@ismi.net
Phone: (517) 223.1420
Fax: (517) 223.1421

Karen Haywood is the Training Director for Maritz Performance Improvement Company. She brings over 15 years experience in the training development and facilitation profession. Karen's value and expertise in conceptualizing creative solutions for automotive clients have catapulted her to a leadership position in the interactive distance learning field. She has impressed clients with her facilitator coaching skills, turning novices quickly into experienced distance learning instructors. Karen was instrumental in assisting General Motors University in setting up instructional processes so that courses could be created and delivered in a uniform manner.

E-mail: karhaywood@aol.com
Phone: (248) 360.9903

Problem-Based Learning in an On-line Course: A Case Study

Thomas S. Ingebritsen
Associate Professor and Director, Project BIO
Iowa State University

James D. Cheaney
Graduate Teaching Assistant
Iowa State University

Introduction

This paper presents findings from an on-going case study involving the use of problem-based learning (PBL) as a mode of instruction in part of an on-line biotechnology course. Problem-based learning involves the use of a "real world" problem as a context for learning. It is a student-centered approach to learning. Learning objectives include: development of critical thinking skills, development of problem solving abilities, acquisition of knowledge and acquisition of skills that support life-long learning (Albanese and Mitchell 1993, Engel 1991). Problem-based learning is usually conducted in a face-to-face setting and little is known about its use in the virtual environment.

We are testing a problem-based learning approach in an on-line course entitled "Biotechnology in Agriculture, Food and Human Health" offered by Iowa State University. This is a three-credit survey course that covers technology and applications of biotechnology as well as ethical, legal and social issues associated with its use. The course was developed through a program called Project BIO. The course consists of on-line lectures that are modeled after lectures in a face-to-face classroom, experiential learning assignments and reading assignments in a required textbook and from various on-line resources. In the on-line lectures, students hear the instructor using RealAudio™ technology and view visual aids delivered as a series of Web-based slides. About 50% of the grade in the course is based on experiential learning activities and the other 50% is from on-line exams based on content in the on-line lectures and reading material.

Design of the Problem-Based Learning Unit and Assessment

In the unit, students assume the role of a 29 year-old man whose mother died of a genetic disease called Huntington's disease. The ultimate objective of the activity is to make a decision about whether the man should undergo pre-symptomatic testing for the genetic disease.

Two versions of the PBL unit were tested. Version 1 had three assignments (Defining the Issues, Gathering Information & Solving the Problem), which served as guiding problems for the unit. All of the assignments were done as cooperative learning activities involving groups of 2 or 3 students. Group were assigned so that all of the students in a group were in different geographical locations. The groups were established earlier in the course through an assignment called "Learning Teams". In this preliminary assignment students are asked to decide on a name for their learning team, assign responsibilities to team members and test technologies (e.g. e-mail, chat, discussion forum) that could be used to conduct group meetings (synchronously or asynchronously).

In the Defining the Issues assignment, the students were asked to identify the issues involved in the decision and the types of information that will be needed to make an informed decision. Each group posted a summary of the ideas developed on the course discussion forum.

In the Gathering Information assignment, students were required to write a short research paper about Huntington's Disease. The paper included information about clinical features of the disease, information about the gene, the genetic defect and the mode of inheritance of the disease, and information about genetic testing for Huntington's disease. Resources for the paper included on-line lectures and text book reading assignments about genetic diseases and genetic testing technologies as well as WWW resources (e.g. molecular biology and genetics databases, informational Web sites).

In the Solving the Problem assignment, the students used a structured decision making process to decide whether the individual should be tested for the genetic disease. The decision making process involved identifying the stakeholders, brainstorming about possible options, considering the effect of various options on all of the stake holders and finally choosing the best solution. The students then wrote a report on this decision, focusing on the logical defense and reasoning for their opinion. Students were not graded on their opinions per se, but on the persuasiveness of their arguments.

A problem with the first version of the PBL unit was the narrow focus on just one genetic disease. Because of this the unit was revised by replacing the Gathering Information assignment with two other assignments, Genetic Diseases and Genetic Testing, which gave the students a broader view of the subject. The other two assignments, Defining the Issues and Solving the Problem were used unchanged in the second version of the PBL unit.

In the Genetic Diseases assignment, students chose a genetic disease from a list of genetic diseases. The list was available on the WWW. They were required to do research in order to answer a set of specific questions about the disease and the gene associated with the genetic disease. In the genetic testing assignment, the students are asked to design a pre-symptomatic genetic test for a fictional genetic disease. Resources for the two assignments included on-line lectures about genetic diseases and genetic testing technologies, text book reading assignments and WWW resources. The Genetic Diseases assignment was conducted as an individual student activity while Genetic Testing was a group assignment.

Version 2 of the problem-based learning unit was worth 28% of the grade in the course. Student assessment was based on written assignments (2/3 of grade) and a unit exam (1/3 of grade).

Evaluation of the Problem-Based Learning Unit

Exam Scores

Students using PBL Version 1 took a non-credit pre-module exam containing questions from the same test bank (thus, the same difficulty) as the for-credit post-module exam. The exam primarily tested student knowledge about genetic testing. Pooled scores from the two semesters that Version 1 was used indicated an increase in exam scores from 56 ± 21.8 (n = 38) (equivalent to an F letter grade) on the pre-module exam to 78 ± 17.4 (n = 38) (equivalent to a C+ letter grade) on the post-module exam. These results indicate that students experienced a significant gain in factual knowledge about genetic testing during the unit.

	Pre-Module Exam ± SD (n)	Post-Module Exam± SD (n)
Before PBL		
Fall 1997	n/a	84 ± 13.1 (16)
Spring 1998	n/a	84 ± 17.9 (22)
Average Pre-PBL	**n/a**	**84 ± 16.1 (38)**
PBL Version 1		
Fall 1998	48± 19.3 (19)	80± 17.1 (22)
Spring 1999	64± 24.0 (19)	75± 17.7 (23)
Average PBL V1	**56 ± 21.8 (38)**	**78 ± 17.4 (45)**
PBL Version 2		
Fall 1999	n/a	83 (21) ± 18.7
Spring 2000	n/a	81 (13) ± 22.0
Average PBL V2	**n/a**	**82 (34) ± 20.0**
Overall Average	**56± 21.8 (38)**	**81± 17.8 (117)**

Table 1. Average exam scores of problem-based learning (PBL) component of Biotechnology in Agriculture, Food and Human Health. All scores listed as percentages (maximum score = 100). Pre-module exam in PBL Version 1 was not given for credit. All post-module exams were taken for credit towards completing class. n/a = Exam not used

We also compared student performance on the post-module exam with the performance of students who took the course prior to developing the PBL unit (Table 1). The Genetic Diseases module was initially taught using an instructor-centered approach. The exam scores for students taking either version of the PBL unit were indistinguishable from those of students taking the module in the instructor-centered mode (pre-PBL). This suggests that teaching the module in a problem-based mode does not compromise the acquisition of factual knowledge.

Assignment Scores

Assignment scores for the unit are shown in Table 1. The quality of the written reports was high. Average grades for the Genetic Diseases, Genetic Testing and Solving the Problem assignments were 90%, 91% and 92%, respectively. This indicates that significant higher order processing of the fact-based information was occurring.

There were differences between the Fall 1999 and Spring 2000 semesters assignment grades. These two semesters were graded by two different graders. These differences may have been due to different subconscious criteria for the subjective format of the three assignments. In addition, the Fall 1999 students were an exceptional group who scored extremely well on assignments in all phases of the course.

	Genetic Diseases ± SD (n)	Genetic Testing ± SD (n) [b]	Solving the Problem ± SD (n)
PBL Version 1			
Fall 1998	n/a	n/a	87 ± 9.7 (22)
Spring 1999	n/a	n/a	90 ± 15.2 (23)
Average PBL V1	n/a	n/a	88 ± 12.8 (45)
PBL Version 2			
Fall 1999	96 ± 3.6 (21)	96 ± 5.0 (21)	94 ± 4.6 (21)
Spring 2000	81 ± 20.9 (13)	84 ± 10.6 (13)	88 ± 8.7 (13)
Average PBL V2	90 ± 13.2 (34)	91 ± 7.6 (34)	92 ± 6.5 (34)
Overall Average			90 ± 10.5 (79)

Table 2. Average scores from student assignments of problem-based learning (PBL) component of Biotechnology in Agriculture, Food and Human Health. All scores listed as percentages (maximum score = 100). n/a = Assignment not used. SD = Standard deviation.

Student Evaluations

Table 3 shows responses to the questions posed on the end-of-semester student evaluations concerning the PBL unit. Student evaluations of the PBL environment were very positive, especially when asked to evaluate the accomplishment of learning objectives. Student attitudes toward the two PBL versions were similar.

	PBL V1 (n)	PBL V2 (n)	Ave. (n)
How well did we accomplish the following learning objectives:			
12. Understand the nature and mode of inheritance of genetic diseases	4.5 (40)	4.3 (31)	4.4 (71)
13. Gain an appreciation of the human cost of genetic diseases	4.5 (40)	4.2 (31)	4.4 (71)
14. Understand the principles and technologies used in genetic testing	4.2 (40)	4.2 (31)	4.2 (71)
15. Gain an appreciation of ethical, legal, and social issues associated with genetic testing	4.3 (39)	4.1 (31)	4.2 (70)
16. Develop problem solving skills	3.9 (40)	3.8 (31)	3.8 (71)
17. Learn how to find and process information in Web-based databases	4.2 (40)	4.4 (31)	4.2 (71)
We would like you to rate the effectiveness of the assignments in this component.			
18. Defining the issues	3.9 (40)	3.6 (31)	3.8 (71)
19. Genetic Diseases	n/a	3.9 (31)	3.9 (31)
20. Genetic Testing	n/a	3.7 (31)	3.7 (31)
21. Solving the problem	3.9 (39)	3.7 (31)	3.8 (70)

Table 3. Average ratings from student evaluations of problem-based learning (PBL) component of Biotechnology in Agriculture, Food and Human Health. Ratings are based on a scale of 1 (poor) to 5 (excellent). Version 1 of the PBL component (PBL V1) was used for two semesters, Fall 1998 and Spring 1999. Version 2 of the PBL component (PBL V2) was used for two semesters, Fall 1999 and Spring 2000. n/a – Assignment not used in PBL Version 1.

In anecdotal comments, student indicated that they liked the independent research, exploring the World Wide Web, learning about Huntington Disease and other genetic diseases and communicating with other students about the problem. The cooperative learning aspect of the PBL offered students experience in time management, schedule coordination, and division of labor. However, some student expressed concerns about scheduling difficulties for synchronous electronic meetings with their cooperative groups, and the technical difficulties inherent in an on-line setting (such as Internet lag, computer crashes, or bandwidth or browser problems). In addition, group activities decreases some of the temporal and geographic flexibility advantages that asynchronous on-line courses offer.

BEST COPY AVAILABLE

References

Albanese, M. A., & Mitchell, S. (1993). Problem-based learning: A review of literature on its outcomes and implementation issues. *Acad. Medicine, 68*(1), 52-81.

Engel, J. (1991). Not just a method but a way of learning. In Bould & Felletti (Eds.), Tthe challenge of problem-based learning, (pp. 21-31). New York: St. Martin's Press.

Biographical Sketches

Thomas S. Ingebritsen is an Associate Professor in the Department of Zoology and Genetics. He received a Ph.D. in Biochemistry from Indiana University in 1979. He has been involved in outreach and distance education programs at Iowa State University since 1990. He is currently Director of Project BIO, an outreach program with the mission of developing and sharing biology education resources via the Internet. He developed and currently teaches an on-line biotechnology course. This was one of the first two courses from Iowa State University to be offered on the Internet. He has also participated in the development and teaching of an on-line introductory biology course for life science majors.

Address: Department of Zoology and Genetics
Iowa State University
Ames, IA 50011-3223
E-mail: tsingebr@iastate.edu
URL: http://www.public.iastate.edu/~tsingebr/
Phone: (515) 294-9432
Fax: (515) 294-8457

James D. Cheaney is a graduate teaching assistant in the Department of Zoology and Genetics. He holds a B.S. in Biochemistry and Molecular Biology and a M.S. in Poultry Sciences both from Mississippi State University. He has been involved with Project BIO and has assisted with teaching the on-line course, Biotechnology in Agriculture, Food and Human Health, since 1997. He also is an Adjunct Instructor of Biology at Kirkwood Community College.

Address: Department of Zoology and Genetics
Iowa State University
Ames, IA 50011-3223
E-mail: jcheaney@iastate.edu
Phone: (515) 294-8501
Fax: (515) 294-8457

Instructional Television in Wisconsin: Building From the Grassroots

Marge Jeffers, Manager
Wisconsin Technical College Network (WTCN)
Fox Valley Technical College

Robert Hannu, Director
Wisconsin Overlay Network for Distance Education Resources (WONDER)
Northcentral Technical College

Jane Manske, Director
Northern Lights Network
Cooperative Educational Service Agency (CESA #11)

Daniel Gross, Director
Southeastern Wisconsin Instructional Network Group (SWING)

Carol Popelka, Director
Western Wisconsin Linked Education and Resource Network (WWLEARN)
Cooperative Educational Service Agency (CESA #4)

Glenn Rutgers, Distance Education Manager
Fox Valley Technical College

Background of WADEN

WADEN (Wisconsin Association of Distance Education Networks) grew out of meetings between the ECB (Educational Communications Board) and Wisconsin's distance education network directors. The purpose of these meetings was to share information on distance education activities that were going on throughout the state. As coordination of distance education programming went through a number of transitions, the network directors elected to form WADEN in 1997. Membership is open to any organization with an interest in distance education partnerships, including K-12 schools, technical colleges, colleges, universities, businesses and government agencies. WADEN's vision is "that every resident of the State of Wisconsin will have equitable access to quality K-12, post-secondary, and continuing adult education opportunities regardless of their physical location in the state, based upon the needs of the learner, instructor, or citizen being served. Ultimately, all distance education systems in the state will be interconnected with the ability to acquire, at an affordable price, the appropriate technology needed for specific audio, video, and data applications." Membership currently includes directors and coordinators from over 40 networks and affiliates.

Evolution of Instructional Television in Wisconsin

Wisconsin has a long history of using technology to bring education to the citizens of the state. Beginning early in the century with WHA radio and evolving through the development of other broadcast, audio conferencing, and audio graphic systems, interactive television became a dominant force in distance education with the founding of Project Circuit in 1979. Approximately 9 ITFS (Instructional Television Fixed Service) networks evolved in the 1980's and led the way to the modern digital fiber optic networks which began with ERVING (1990), NWECS (1992), WestWING (1994), and continued with a number of other pioneering consortia such as SCING, WONDER, SRTNC, and TRITON. The need for a seamless statewide network prompted the development of the TEACH (Technology for Educational Achievement) Wisconsin program, initiated by Governor Tommy Thompson in January 1997. It provides a subsidy for schools to help defray the cost of the fiber optic link to the statewide BadgerNet video network as well as grants to support technology initiatives. It also provides a standardized state contract for video service and the purchase of ITV (Instructional Television) room equipment. The first TEACH networks were activated in the fall of 1998. Currently, 30 DS-3 networks are operating in the state and provide access to 322 classrooms.

Benefits of Partnerships

The benefits of this organization are the promotion of communication, sharing of programming opportunities, and enrichment of curriculum offerings to all schools. Individual schools are able to develop and communicate their unique needs at the local level – or from the grass roots. The partnerships created through WADEN allow schools to expand course sharing, develop partnerships among high schools, technical colleges, colleges, and universities as well as enrichment opportunities with museums, zoos, etc. both within as well as outside Wisconsin through the use of ISDN gateways. The DS-3 sites can connect with compressed video sites within Wisconsin as well as throughout the country.

UW-Extension supports a WADEN website and program database. (The web address is www.uwex.edu/disted/waden/) This database provides a wealth of information on statewide network class offerings that include course descriptions, numbers of students served, schedules, network usage, etc. The website also includes general information on WADEN and its members along with links to other distance education resources. A WADEN listserv also acts as a valuable tool for communicating between networks.

Distance education facilities are used to provide daytime classes to high school junior and senior students, evening adult continuing education, and staff development and graduate courses for faculty. Exceptional education needs are also being addressed through connectivity with agencies and institutions including the Wisconsin School for the Deaf, the School for the Visually Impaired, and other sites. The ITV studios also provide meeting sites that save tremendous time in travel costs.

Technical colleges and universities offer courses to other post-secondary sites throughout the state as well as high schools. They also offer career planning for high school students, focus sessions on specific program areas, CAP classes, youth options courses, and sessions on college selection tips.

Grassroots Operations: How a Network Functions

Typically, a regional ITV network has a governing board, programming committee, technical committee, site facilitators, and a small staff that may include an assistant and/or scheduler and director. Local school representatives are the critical components in decision making for the network. The key to success in any instructional television network is effective and enthusiastic teachers. The regional networks depend on committees made up of teachers, counselors, principals, and administrators to provide direction for the instruction offered on the network. Student achievement is the fundamental premise of all program planning.

Each regional network retains local control of class scheduling, with programming ultimately determined by the individual schools based on local needs. ITV classes scheduled over any network, while meeting all state curriculum standards, do not require special state approvals.

"Techie Stuff": Technical Information

The BadgerNet video network uses codecs, transmission equipment, and scheduling software manufactured by Tektronix, Inc. Seventy-two DS3 circuits provide connectivity between the 23-video switches located throughout the state. A typical BadgerNet distance education classroom consists of a computer-based system controller as well as cameras, monitors, microphones, a document camera, VCR, speakers, echo cancellers, and video routers. Through the assistance of the Wisconsin Department of Administration, a standard statewide equipment bulletin was developed for ITV classroom equipment that eliminates the need for each school to obtain individual price quotations.

In addition to providing the video/audio link between schools, each connection also provides Internet connectivity over T1 lines that are embedded in the DS3 link. This provides the added benefit of affordable access to the Internet.

WADEN provides a line of communication with state agencies for future decision-making that affect distance learning in Wisconsin in order to better ensure the needs are being met for all involved.

Summary

The mission of WADEN is to work collaboratively to advance and improve distance education opportunities for all learners in Wisconsin. Through its efforts, courses and educational programming are blossoming throughout the state. Learners of all ages are experiencing the benefits of this growth. Courses that otherwise would not have been available in communities are now easily shared. Professional development and certification requirement offerings are more accessible. The educational opportunities being shared throughout the state are the direct result of input from the local schools. Teachers, students, principals and administrators are the best resources for identifying educational needs. WADEN provides the vehicle for communicating that need to others who can help.

Biographical Sketches

Marge Jeffers has over 15 years of distance education experience and is currently the manager of WTCN, the Wisconsin Technical College Network. She will be the WADEN Chair for 2000-01. She serves on the Program Committee for the Governor's Educational Technology Conference and has been a presenter at a number of distance learning conferences, including the Governors Wisconsin Educational Technology Conference, the Wisconsin Vocational Association Conference, the Conference on Distance Teaching & Learning, and the League of Innovation. She has a Bachelors Degree in Business Administration from Marian College of Fond du Lac.

Address: 1825 N. Bluemound Drive
PO Box 2277
Appleton, WI 54912-2277
E-mail: jeffersm@foxvalley.tec.wi.us
URL: http://its.foxvalley.tec.wi.us/WTCN/default.htm
Phone: (920) 831-4397
Fax: (920) 831-4388

Glenn Rutgers is Manager of Distance Education at Fox Valley Technical College in Appleton, Wisconsin. As Manager of Distance Education, Glenn is responsible for programming associated with a number of distance education networks, video/print correspondence courses, Internet courses, and satellite downlink services. Additionally, he has been involved in training instructors in using the various technologies associated with Interactive Television networks. He has been in this distance education position for nearly four years.

Address: 1825 N. Bluemound Drive
PO Box 2277
Appleton, WI 54912-2277
E-mail: rutgers@foxvalley.tec.wi.us
URL: http://its.foxvalley.tec.wi.us/iss/disted/default.htm
Phone: (920) 735-4871
Fax: (920) 735-5618

Carol Popelka is the Director of the Western Wisconsin Linked Education And Resource Network (WWLEARN), a video distance learning network connecting 13 high schools, UW-La Crosse, WWTC and CESA #4. Ms. Popelka has had extensive experience in the development field as a grant writer and consultant. She also served as a management trainer for private industry, and has taught at the technical college and high school level. She has served on the Governor's Council for Public Television and is currently on the Board of Directors of the La Crosse Teachers Credit Union. In her current position, Ms. Popelka conducts distance education training and in-services for teachers and staff of WWLEARN schools. She received her Bachelor of Arts degree and secondary education certification from Luther College in Decorah, Iowa.

Address: 923 E. Garland St.,
West Salem, WI 54669
E-mail: cpopelka@cesa4.k12.wi.us
URL: http://www.cesa4.k12.wi.us/programs-services/WWLEARN/index.htm
Phone: (608) 786-4827
Fax: (608) 786-4801

Jane Manske is the Distance Learning Coordinator for a Cooperative Educational Service Agency (CESA #11) in northwest Wisconsin. For the past nine years, she has managed distance learning consortiums. Currently, Ms. Manske is the director of the Northern Lights Network that consists of 23 K-12s, 2 technical colleges, 1 university and CESA #11. Her network was featured in the TEACH WI videotape entitled "Leading the Way". Several times a year, Jane presents workshops that help instructors teach over television. Jane has been a presenter at the Governors Wisconsin Educational Technology Conference and the Conference on Distance Teaching & Learning. She has a Masters Degree in Vocational Education Administration.

Address: 225 Ostermann Dr.
Turtle Lake, WI 54889
E-mail: janem@cesa11.k12.wi.us
Phone: (715) 986-2020
Fax: (715) 986-2040

Robert Hannu has worked as Director of the Wisconsin Overlay Network for Distance Education Resources (WONDER) since August 1995. He has been involved with distance education since 1977, spending ten years with the University of Wisconsin- Extension's Teleconferencing service and eight years at St. Cloud Technical College in St. Cloud, Minnesota, as Regional Coordinator of the Central Minnesota Distance Education Networks. Mr. Hannu is a graduate of the University of Wisconsin- Platteville, with a degree in Industrial Technology, and is the past president of the Wisconsin Association of Distance Education Networks (WADEN).

Address: 1000 West Campus Dr.,
Wausau, WI 54401-1899
E-mail: hannu@northcentral.tec.wi.us
URL: http://www.northcentral.tec.wi.us/wonder
Phone: (715) 675-3331, Ext. 4051
Fax: (715) 675-5868

Daniel Gross is currently the Director of the Southeastern Wisconsin Instructional Network Group. In addition to working with SWING, Dan has also worked with the JEDI, LAC and the NDEN networks. Before becoming a network director, Dan was the Technology Coordinator and a K-8 computer teacher in the Lac du Flambeau school district in northern Wisconsin. Dan began working with computers almost 25 years ago as a fairly young child, which led to taking distance education classes via bulletin boards (BBS) in the mid-1980s, and working with the Internet in the late 1980s at the University of Wisconsin - Milwaukee. Dan received his bachelors degree in Education from Cardinal Stritch College near Milwaukee.

Address: 380 McCanna Parkway
Burlington, WI 53105-3521
E-mail: Grossd@gateway.tec.wi.us
Phone: 262-767-5312
Fax: 262-767-5201

The Relationship of Group Processes to Virtual Learning Team Performance: A Higher Education Experience

Scott D. Johnson
Jared V. Berrett
Jason La Fleur
Chanidprapa Suriya
Seung-Won Yoon

University of Illinois

Introduction

In the approaching 21st century, organizations face many challenges from increased globalization and rapidly changing technologies. While technological advancements in the workplace continue to be the primary factor in maintaining a competitive advantage, the nature of work within organizations is also changing from individual assignments to team-based activities. The change toward increased team-based responsibilities has paralleled the growth of communication technologies that can be used to support work teams. Teams are now able to communicate, collaborate, and perform irrespective of time and space.

The role of teams is not confined to the workplace. Today's workforce and education providers are realizing the benefits of collaborative teams in the learning process. Hundreds of studies have demonstrated that learning is most effective when students work in groups and verbalize their thoughts, challenge the ideas of others, and collaborate to achieve group solutions to problems. While the benefits of collaborative learning have been established for face-to-face teams, the impact of distance and time on team function and process has not been fully examined. Within a virtual team, communication among team members is limited by both distance and time factors. They must plan, communicate, initiate, and substantiate the ideas of their team at a distance. Communication technologies are viewed as the means to reduce the effect of distance and time on group processes.

It is undetermined how virtual learning teams form and establish process protocols to carry out their tasks and obtain their desired project outcomes. The purpose of this study was to describe the community building process of virtual learning teams as they form, as they address conflict, and as they establish group norms.

Theoretical Framework

Work groups, or teams can be defined as "interdependent collections of individuals who share responsibility for specific outcomes for their organization" (Sundstrom, De Meuse, & Futrell, 1990, p. 120). A widely accepted model of the way groups work together highlights the four stages of forming, storming, norming, and performing (Tuckman, 1965). In this theory, each stage is an essential step for a team and much like other linear models, if the first step is not accomplished, the latter stages will not be successful. The interaction between internal and external environments of the team is another important element of team success. In order to evaluate team effectiveness, one must consider the organization context, boundaries, team process, and team performance (Sundstrom et. al., 1990). It is clear that the effectiveness and outcomes of teams is dependent upon the resolution of conflict, developing roles within the team for working together, and supporting one another as individual learners.

Virtual teams are groups of individuals who interact through various communication technologies to accomplish common goals, unrestricted by time or space. In an educational context, virtual teams are being used in online degree programs to enhance learning (Bailey & Luetkehans, 1998). These virtual teams are capitalizing on technologies such as the Internet, computer-mediated communication, and videoconferencing to enhance the communication processes, promote knowledge sharing, and enhance the acquisition of knowledge and skill (Horvath & Tobin, 1999). Although there have been several related studies in this area, few research efforts have focused on the virtual team within the formal education context. Many frameworks and models of analysis of virtual teams have been limited to the traditional group perspective and few empirical research studies have attempted to understand the dynamics of teams within the virtual environment itself (Furst, Blackburn, & Rosen, 1999).

Methodology

This study was guided by an inductive analysis to understand the dynamics of virtual learning teams. The analysis was aimed at discovering the elements that emerged during virtual team development and an analysis of factors that affected their performance.

Participants

The participants in this study were enrolled in a masters degree program that was taught entirely online. Thirty-six graduate students, representing ten different states and two countries, were registered in the initial course in the sequence. The class was divided into seven virtual teams comprised of five or six team members. The groups were established based primarily on geographic location to reduce the impact of disperse time zones on group interaction.

The Internet-based technologies used in the online program were specifically selected to support communication and collaboration of the virtual teams. The technologies included e-mail, a collaborative web forum (WebBoard), synchronous text chat spaces, and Internet pagers (i.e., AOL Instant Messenger). The virtual teams also had the opportunity to use other collaboration technologies to support their work. These technologies ranged from traditional forms such as conference calls to multimedia forms such as NetMeeting.

Instrumentation

Several established instruments were modified to assess virtual team process and performance. Lurey's (1998) *Virtual Team Survey* was used to obtain information about team process, leadership, technology use, perceptions regarding overall team performance, and individual satisfaction with the team. Nemiro's (1996) *Background Survey of Virtual Team Members* was used to assess team member feelings about working in a virtual team and to identify the types of interactions that occurred. The virtual team instruments were redesigned and administered via the Internet.

Procedures

Data were collected following the completion of the six-week course. Virtual team members were sent an e-mail message that asked them to complete the instruments online and submit their results electronically. Following the collection of survey and course data, an average of three members from each team were interviewed. The interviews were conducted over the telephone by two of the members of the research team. Having two researchers participate in the interviews facilitated notetaking and allowed the interviewers to compare notes and discuss the information obtained during each interview.

Results

Team Formation

The students were assigned to a virtual team at the beginning of the course and no guidance was offered to the teams in terms of their formation and development other than a due date for the first team assignment. This led to different rates of development for the teams as each virtual learning team evolved and defined their group protocols/norms and leadership. During the first online synchronous meeting of the class five of the teams began to interact socially. At this time they began to define some group norms by discussing team purposes and goals and performed some team building activities. Two teams waited longer than two weeks to contact one another and begin their social interaction. These teams met just prior to the due date of the first assignment. Some of the comments made by participants regarding team formation included:

- "I think we met after the first class. We talked a bit about ourselves, our backgrounds; what we thought of class. We familiarized each other with technology . . . Informal teaching and instruction of other team members. We talked about assignments and how we would do them."
- "It was difficult negotiating to meet online . . . what night and time worked best for everyone varied with children, work schedules, etc."

Team Leadership and Roles

The role of leadership was an interesting aspect of the virtual teams. Surprisingly, only two of the seven teams indicated that a leader emerged in the group. Most of the groups shared the leadership role between everyone, often rotating on a weekly basis. One student claimed, "It was a team thing—we all made suggestions, we all contributed. It was a group effort and it was shared leadership." Responses to the interview question, "Did you have a leader in the team?" are shown below:

- "One person emerged as the leader for the team, and this person would keep the group on task. This person had strong opinions and personality."
- "We did not have a leader, and this was problematic . . . It's difficult to [form a team] face to face, and even more so with a virtual team. People are too polite and don't resolve conflicts."
- "No. Roles varied based on what the assignment was, because we all had different backgrounds. Everyone had a specialty . . . it depended on personal scheduling."

The lack of consistent leadership may have led to problems in virtual teams. The participants indicated a concern about their team members' shared understanding of what the team was supposed to do. Team members also seemed to use their own judgment in solving problems, which may be indicative of a task-oriented approach to team performance resulting in less of a "team," and more of an individual work group.

Team Norms and Processes

Although each team was unique, there were commonly shared elements in their procedures, especially the work process for completing team assignments. Generally, the teams went through a process similar to the one described below:

1. Meet after the class synchronous session to define roles for the assignment and discuss timeframes for completion.
2. Post individual input on WebBoard for individual review.
3. Meet synchronously as a team two days before the assignment was due and refine input.
4. Team compiler drafts and posts the revised assignment.
5. Assignment posted for final approval and additional comments one day before due date.
6. Incorporate any additional comments post the final draft.

Overall, most of the teams settled into a work process, similar to the one described above, after the first two or three assignments. Of course this varied between teams, with some teams meeting less and others meeting more often (up to three or four times a week).

Team Interdependence and Trust

In general, each team exhibited a collectively positive team perception of individual teammates and their willingness to contribute to a common vision and commitment in achieving team goals. "We worked very cooperatively. Each of us has the capacity to trust each other explicitly to do well." However, not all team members perceived they were part of an effective team. One teammate made the claim that "We never became a team. There was spotty participation throughout, and things were often left in a half finished state."

Conflict resolution stemming from lack of willingness to participate, lack of planning, or individual disagreements seemed to be three social issues that influenced the successfulness of building team trust and unity. Two of the teams reported having negative experiences about an incident that were never resolved. Individuals were able to simply log off of the chat sessions at any time they felt like it and "virtually" disappear if they chose to. When conflicts were not effectively resolved it hampered the progression of the team. One team found it "difficult to resolve communication issues" but when these occurred, they would "speak to the person individually on private chat. Keep on private chat, and not discuss it in front of others." Overall, teams found that they "had to have a lot of trust with other members" and although the majority of the teams had no real problems with this, any type of trust issue made collaboration very difficult.

Social Interaction

To better understand the students' social interaction needs, they were asked to respond to the question " did you feel the need to meet face to face?" The majority of the respondents claimed that meeting face to face was unnecessary. They felt that everything that was required of them was accomplishable virtually without the face to face interaction. However, three of the teams had some team members meet face to face at different times where it was geographically feasible and suggested that these meetings were beneficial in building social relationships with their colleagues. Individuals who were left out of the face to face meetings summarized their feelings well by saying, "It would have been fun or great, but it wasn't necessary. Those who met face to face had a better relationship. But they didn't let it hinder other relationships."

Although face to face meetings were not necessary for most of the participants, there is evidence that it is still desirable when possible. In searching for answers to the need for meeting face to face, several benefits of not meeting face to face emerged. Interviewees suggested (1) not meeting face to face enabled more flexibility in scheduling meetings, (2) people are less inhibited from a distance, and (3) in the long run, it is less time consuming because of "less socializing and more focus on the task." One team member stated "Collaboration is enhanced by face to face. You can do anything if you are paired up right. I realized that we as a society have moved on, and I have to adapt." Those who are ready to meet the changing dynamics of business and education will be those that can adapt well to the changing nature of communication and information delivery.

Discussion

Virtual teams work. As with any collaborative learning project, the types of assignments or work assigned in teamwork situation should be carefully considered. There should be a clear objective and benefit established for using group assigned tasks, especially in a virtual environment. They should not be assigned "Just because." The majority of interviewees suggested that if the task was too complex, it would be difficult to accomplish without the option of face to face interaction.

Instructional material on team effectiveness, formation, planning, and facilitation should be included in online programs. Instructors must become mediators and facilitators of virtual teams. The tendency is to build the teams and assume people know how to interact and efficiently operate in "teams" but it is not so. The majority of good teams do not occur out of happenstance —they are developed, both virtually and face to face.

References

Bailey, M. L., & Luetkehans, L. (1998). Ten great tips for facilitating virtual learning team. *Proceedings of the Annual Conference on Distance Teaching & Learning*.

Furst, S., Blackburn, R., & Rosen, B. (1999). *Virtual teams: A proposed research agenda*. Paper presented at the 1999 Academy of Management Conference, Chicago.

Horvath, L., & Tobin, T. J. (1999). *Twenty-first century teamwork: Defining competencies for virtual teams*. Paper presented at the Academy of Management Conference, Chicago.

Lurey, J. S. (1998). *A study of best practices in designing and supporting effective virtual teams*. Unpublished doctoral dissertation, California School of Professional Psychology, Los Angeles.

Nemiro, J. E. (1998). *Creativity in virtual teams*. Unpublished doctoral dissertation, Claremont Graduate University, Claremont, California.

Sundstrom, E., De Meuse, K. P., & Futrell, D. (1990). Work teams: Applications and effectiveness. *American Psychology, 45*, 120-133.

Tuckman, B. W. (1965). Development sequence in small groups. *Psychological Bulletin, 63*, 348-399.

Biographical Sketch

Seung-won Yoon is currently pursuing a Ph.D. in the Department of Human Resource Education at the University of Illinois, with an emphasis on Instructional Technologies. He is interested in the effects of network and database-assisted adult learning and the efficient use of information systems for Human Resources. He received his M.A. in Teaching English as a Second Language (TESL) from the Division of English as an International Language (DEIL) at Illinois. He also works for the Web Technology Group where he designs, develops, and manages web projects.

Address: Scott D. Johnson
345 Education Building
1310 South Sixth Street
Department of Human Resource Education
University of Illinois at Urbana-Champaign

Champaign, IL 61820
Phone: (217) 333-0807
Fax: (217) 244-5632

E-mail:	Scott Johnson	sjohnson@uiuc.edu
	Jared Berrett	berrett@uiuc.edu
	Jason La Fleur	jlafleur@uiuc.edu
	C. Suriya	suriya@uiuc.edu
	Seung-Won Yoon	yoon2@uiuc.edu

Interactive Television:
A Learning Environment for K-8 Students

Leonore Kopitzke
WEB Grant Director
Nicolet Distance Education Network

Michele Nickels
WEB Grant Assistant
Nicolet Distance Education Network

When Congressman David Obey visited the Nicolet Distance Education Network (NDEN) on April 26, 2000, he related a story about a college friend from a small rural community. Congressman Obey said that it was soon apparent that his friend came from a school that did not offer the same preparation as the school district from which Obey had graduated. Interactive television (ITV) classes have been one way that small isolated rural school districts have been able to narrow the gap in opportunities between large, populated areas and the rest of the state. ITV has allowed the small schools in the state to offer AP classes, 2 or 3 foreign languages and other upper level electives that would be impossible to offer individually. The playing field was made more level for the high school students of the state.

Next came the realization that ITV could work for teacher inservice and college courses. Teachers and community members are able to take training in their home town rather than traveling hours to get to a university. They also have the advantage of live, real time interaction with their teacher. Everyone can see and hear everyone else in the class. This was a major improvement over correspondence courses, real time voice only or one way video classes. With the advent of internetwork connections an even wider variety of opportunities will is becoming available for teachers and community members throughout the state.

Now there is a third audience taking advantage of ITV programming:. K-8 students. In August of 1998, NDEN received a Federal Innovations in Technology Challenge Grant. The main focus of the grant is to increase the use of interactive communication technologies among the K-8 students in the ten NDEN school districts. These school districts are in the northereastern part of the state and include: Beecher-Dunbar-Pembine, Crandon, Elcho, Goodman-Armstrong, Laona, Niagara, Phelps, Tomahawk, Wabeno and White Lake. The grant cited that this innovative programming would use Environmental Education as the curricular basis through which K-8 students and teachers would be introduced to interactive technologies.

What steps are necessary to institute such a program?

7. Hold informational meetings for teachers and other staff at each of the school districts involved. These meetings should answer questions, allay fears and create a positive atmosphere for the programs and training that are to come.

8. Provide technology training for school staff and for key community members. NDEN offered a 1 graduate credit class in teaching over the ITV system. On site workshops in using CU-SeeMe software were held for staff in each of the school districts. Once teachers became comfortable with these technologies, it was less threatening for them to let their students use them.
9. Prepare a schedule of class topics and class times. This was always done after the high school schedule for a given semester had been finalized. The K-8 programming was offered only during open time slots. High school classes remain the first priority for the network. There has been some discussion of opening up a regular time each day when elementary programs could be presented. The schedule of K-8 offerings is on the NDEN web site (nden.k12.wi.us). Teachers need to know not only the time, the dates and the sites of a particular program, but also how to prepare their classes.
10. Teachers must take their class into the ITV room in advance of receiving a program. The students practice being on camera, using the microphones, get rid of the sillies and generally learn to feel at ease while no other school is watching. It is also very important for K-8 teachers to remain in the ITV room during class. This is not free time to go to the lounge or prep time to grade papers. The classroom teacher plays an active role during the K-8 presentations.
11. Each lesson included pre and post lesson activities so that initially the students come to the class with knowledge of the same vocabulary and skills. They are also able to go outdoors into their school forest or schoolyard and practice what they have learned during the post-class activities.
12. It is also important to let parents and other community members know what technology is being used in school. Several school districts held technology nights which included demonstrations of CU-SeeMe software and sample lessons in the ITV room. At other schools these technologies were highlighted during Open House or Parent/Teacher Conferences.

Who will teach these lessons for your network? NDEN had the advantage of being able to hire Michele Nickels to organize the initial programs. She started with topics that teachers were already familiar with such as Earth Day, Arbor Day and National Wildlife Week. Materials are readily available for these programs and are provided by organizations such as the Department of Natural Resources and the National Wildlife Federation. However, there are undoubtedly many people in your area who are already established and available to present environmental programs. They mainly need exposure to and training in teaching using interactive technology. Organizations that provide environmental education using interactive technologies have found that they can reach a larger audience and save themselves time and travel expenses. For example, students can be taught to use a compass or a tree key before their on-site visit to an environmental education facility. This allows the majority of their field trip time to be spent in hands on activities outside in the environment.

As your regular classroom teachers become more familiar with your ITV room and take some training, they will be more willing to share familiar lessons with one or two other classes. Some teachers have had their students give presentations to a class at a different school district telling what they learned during school forest day, sharing science projects or presenting cumulative reports. These activities allow students to feel at ease with the ITV technology and generally indicate that their teachers are extremely comfortable with the technology as well. As the second year of the grant progressed, more of the technology becoming transparent to the curriculum. Both teachers and students were using the technology but the focus was on goals and objectives in the curriculum. The technology was no longer frightening or intimidating. Rather it was a normal, useful tool.

Participation in the K-8 environmental Education programs has grown:

- 1,120 students participated in 26 lessons in 1998-1999 school year
- 1,951 students participating in 86 lessons during the 1999-2000 school year.

There have been other positive outgrowths of this program as well. School districts have dusted off and revised Environmental Education curricula that was written in the late 70s. Teachers are integrating other technologies into their lessons. School forest plans are being developed that incorporate the Wisconsin State Standards for Environmental Education. There is increased community involvement and increased sharing among teachers with similar interests in geographically disparate districts. Curriculum boxes using environmental themes were developed for each of the ten school districts. These boxes contain multiple resources that can be used in a regular classroom or to prepare an ITV lesson. Teachers are asking about sharing geography and English lessons as well as environmental education.

Have we leveled the playing field? Have we increased opportunities for students in small rural school districts? Certainly technology is here to stay. Students who are able to use technology to their advantage will have greater success in the future. Students who feel connected to other parts of the state and other parts of the country will have a more realistic view of the potential that exists for their lives. However, we must never forget that the technology itself is not the answer. Programs will be updated. Hardware will become obsolete. It is the learning, the relationships, the attitudes and the adaptations that students are gaining through this program that will help them in their high school career as well as later in life.

Biographical Sketches

Leonore Kopitzke has been an educator in Wisconsin for over 20 years. Since receiving her master's degree in science education from Northern Illinois University, DeKalb, IL in 1975, she has earned over 60 additional graduate credits. She is certified to teach any science or math class grades 7-12 in the state of Wisconsin. In the 97/98 school year, her 19th year in the Waunakee school district, she taught both first and second year Chemistry as well as Biotechnology. She has attended summer programs sponsored by the National Science Foundation, the Howard Hughes Foundation and was one of two teachers from the state selected to attend the AT&T technology conference in New Jersey. In August, 1998, she accepted a position with the Nicolet Distance Education Network in Rhinelander. While with NDEN she has taught adult education classes for Viterbo College and presented sessions on distance learning at the Governor" Wisconsin

Educational Technology Conference, The Classroom Technology Conference in Oshkosh and the National Science Teachers convention.

Address: Nicolet Distance Education Network
P.O. Box 518, Highway G
Rhinelander, WI 54501
E-mail: lkopitzk@nicolet.tec.wi.us
Phone: (715) 365-4685
Fax: (715) 365-4687

Michele Nickels graduated from UW Stevens Point in 1995 with a degree in Wildlife Management and Environmental Education and Interpretation. Since graduation she has helped manage a zoo, worked in fish propagation, and assisted in fish management. During the summer she now works as a naturalist for the Wisconsin Department of Natural Resources in the Northern Highland/American Legion State Forest. As a naturalist, Michele helps deliver, develop and coordinate the education programs for the State Forest. Michele was hired in October, 1998 as an environmental education consultant for NDEN. She currently organizes and presents the K-8 environmental education programs during the school year while continuing her work for the DNR in the summer.

Address: Nicolet Distance Education Network
P. O. Box 518, Highway G
Rhinelander, WI 54501
E-mail: mwangeli@nicolet.tec.wi.us
Phone: (715) 365-4685
Fax: (715) 365-4687

Activity-Based-Costing Models: A Constructive "Real-Time Pacing Mechanism" (RTPM) Feature in the University of Wisconsin Model

David G. Kraenzel, MS and PhD Student
Continuing and Vocational Education (CAVE)
University of Wisconsin-Madison

Thomas W. Smith, MS, Director
Engineering Telecommunications Programming
Department of Engineering Professional Development
University of Wisconsin-Madison

Overview

The need for interdisciplinary activity-based-costing information in the university system is well established in distance education circles. Some of the more recent pioneering cost analysis works which provide pre-1980 historical referencing as well as progressive research in this area include: Ehrmann and Milam (1999); Jenny (1996); Meisinger and Dubeck (1984); Moore and Kearsley (1996); Rumble (1997); and Smith (1998, 2000). A preliminary listing of cost studies is provided on the web by the University of Wisconsin-Extension at: http://www.uwex.edu/disted/costs.htm. The Flashlight™ Model in particular, with its applied case studies by universities, provided the skeletal activity-based-costing templates for this model.

A Total Systems Approach

Perhaps Jenny (1996), writing on behalf of the National Association for College and University Business Officers, concisely sums up the costing need and dilemma facing distance educators. He maintains " Part of the problem is that 'higher education accounting is not organized to answer questions concerning the full costs of teaching a conventional course, conducting a seminar, admitting a freshman class, or managing the institution's heating and cooling system…(sic). Sometimes the normal accounting system is so far removed from what is needed that elaborate new stand-alone costing models must be constructed. We do not necessarily agree with the need for elaborate so much as the need for a 'new" cost accounting model for distance information classes developed using information technology" (p. 93). Moore and Kearsley (1996) state that "In order to make budget decisions on a rational basis, it is necessary to have reliable evaluation data on all aspects of an organization's distance education efforts. Hence evaluation is fundamental to good budget decision making" (p. 180). This observation also supports an argument for developing independent costing systems to serve the demanding needs of distance education while not interfering with the traditional university costing systems that operate on a different pacing and timing schedule.

Purpose

The purpose of this paper is to introduce a "real-time pacing feature" for consideration in developing a comprehensive activity-based-costing model. This feature consists of a mechanism that brings timeliness and accuracy of information into the independent system referred to by Jenny (1996) and the completeness and reliability of (cost) evaluation data needed for rational decision-making documented by Moore and Kearsley (1996). As we think in terms of a total systems approach, this mechanism is an independent subsystem that can also be applied to the revenue side of the cost-effectiveness equation. Therefore, total revenue becomes the starting point of the model. The result offers a useful and flexible financial decision-making tool for educators. What then is a "real-time pacing mechanism (RTPM)?"

Real-Time Pacing Mechanism (RTPM)

Many different definitions, interpretations and explanations of "real-time" exist in today's literature (Real Time Encyclopedia Online, 2000). Further, "There are several definitions of real-time, most of them contradictory. Unfortunately, the topic is controversial, and there doesn't seem to be 100% agreement over the terminology" (p. 3). For the purposes of this discussion, continuous real-time information systems and features are based on the responsiveness concept discussed by Aaker (1998, p. 9-11) and a useful description by Gillies (2000).

If we apply Aaker's (1998) primary assumption underlying continuous real-time information systems to activity-based-costing, it may be read as follows: the periodic (cost) planning cycle is inadequate to respond to rapid changes occurring in the (distance education) marketplace. Further, "Recognition of the demands of a rapidly changing environment has stimulated the development or increased use of methods, systems, and options that are responsive. In particular, it suggests a need for continuous, real-time information systems rather than, or in addition to, periodic analysis. More sensitive environmental scanning, the identification and continuous monitoring of information-need areas, efforts to develop strategic flexibility, and the enhancement of the entrepreneurial thrust of the organization may be helpful" (p. 11).

Gillies (2000) states "A real-time system is one in which the correctness of the computations not only depends upon the logical correctness of the computation, but also upon the time at which the result is produced. If the timing constraints of the system are not met, system failure is said to have occurred" (p. 4). In addition to this description, we will also interpret the term continuous, when added to the term real-time, to imply asynchronous electronic access to revenue and costing databases. Hence, "anytime and anywhere" electronic availability of the most current distance education accounting information becomes an objective of this modeling endeavor.

The innovative use of a responsive RTPM feature then holds the potential to assist decision-makers in responding to emerging distance teaching and learning educational opportunities, threats and trends as they occur independent of the customary periodic strategic planning cycle. Indeed, we see the future need for RTPM escalating as competition, collaboration and alliance formation occurs in the field. This growing need is evidenced by private companies such as Barnes & Noble (http://www.bn.com.) entering the marketplace and strategic alliances being formed between companies such as Hungryminds.com (http://hungryminds.com) and various universities.

The Model

The model presented in Table 1 is being built using the seven-step process and basic templates from the TLT Group, Inc. Flashlight™ Program Model (Ehrmann and Milam, 1999). Step one, presented below, illustrates an example of modification (the italicized portions represent UW additions or modifications):

Step 1) Identify your business concerns and the specific questions you want answered. *What are the analyses criteria that we want to apply? Benefit/Cost; Return on Investment; Return on Assets are a few. For example, the benefit/cost ratio and return on investment merit will be judged based on the following fundamental criteria:*

If B/C is = or > 1, then the DE program is deemed cost-effective
If B/C is < 1, then the DE program is not deemed cost-effective
The ROI should "Approach zero as its Limit"

Cost Model Assumptions

- Distance education is a strategy used to meet learner, organizational and institutional needs (Smith 1998, 2000);
- The model uses a total systems accounting approach to distance education;
- The goal of the analysis is to determine how distance education can be accomplished cost-effectively not whether it is cheaper than some other approach Smith (2000);
- Decision-makers are at the senior administrator level of an institution or organization;
- Overall program quality assumptions are based on defined TQM assumptions and are subject to redefinition; and apply to a program entity considered to be a series of courses leading to an accreditation or certification or degree (Hackman and Wageman, 1995):
  1) high quality is actually cheaper than low quality;
  2) people want to do good work;
  3) quality problems are cross-functional;
  4) top management is ultimately responsible for quality
- One measure of information quality is precision (pacing, timeliness and accuracy);
- The periodic (cost) planning cycle is inadequate to respond to rapid changes occurring in the (distance education) marketplace;
- Management uses a human resource framework (Bolman and Deal, 1997).

Recommendation: Given the UW model presented, the following recommendation is made based on the actual figures for the first year of program operation: reinvest the $50,000 GAPI (Gain After the Initiative) back into the program to develop the Real-Time Pacing Mechanism (RTPM). In addition, up to $50,000 in matching funds will be available from the Contingency and/or R&D budgets for a total of $100,000 to support this decision. This action will improve the quality of information as measured by precision pacing, timeliness and accuracy, thereby increasing the probability for continued success throughout the program lifecycle.

A Simplified Model Overview

Table 1. A Simplified Activity-Based-Costing Model Summary: The UW Master of Engineering in Professional Practice Program. Actual revenues and costs rounded to nearest $5,000. Provided by Thomas W. Smith, Director of Engineering, Telecommunications Programming. Department of Engineering Professional Development. University of Wisconsin-Madison. June, 2000.

Revenue Sources	**Actual**	**Including RTPM**
Tuition	$765,000	$765,000
Telecomm	80,000	80,000
Royalties		
Other Dollars: Grants	30,000	30,000
Intangibles: Goodwill	30,000	30,000
Total Revenue	**905,000**	**905,000**
Activity Costs		
1) Management	110,000	110,000
2) Platform Resources		
a. Web	50,000	50,000
b. Telecomm	80,000	80,000
3) Development	120,000	120,000
4) Delivery	190,000	190,000
5) Course Maintenance/Revision	95,000	95,000
6) Marketing	80,000	80,000
7) RTPM Linkages		**50,000**
8) Quality Assurance	30,000	30,000
Subtotal	**755,000**	**805,000**
9) Contingency (5%)	40,000	40,000
10) R &D (7-8%) (Platform Support)	60,000	60,000
11) **Total Cost**	**855,000**	**905,000**
12) **GAPI** (Gain After Program Initiative)	**$ 50,000**	**$ 000.000**
13) **Analysis** (B/C, ROI)	B/C = 1.06 ROI = .06%	B/C = 1.00 ROI = 0.0%
14) **Program Effectiveness**	Cost-Effective	Cost-Effective

15) **Program's Future Direction**

Authors' recommendations

I. Revenue: *Increase Enrollment
*Explore Royalty Opportunities
*Seek Grants
*Refine Goodwill Valuation

II. Costs: *Reinvest 100% of GAPI in RTPM
*High Quality=Low Cost Strategy

Where: *Total Revenue*-The revenue activity includes tuition, student payment of the Telecomm (technology) fees, royalties to the organization, grants used in development or operation and a dollar valuation for goodwill. Goodwill is defined as the value of a program in patronage and reputation over and beyond its tangible assets. **1)** *Management Activity Cost*-This includes Executive and Program management tasking. The management of distance education institutions and the administration of programs are complex. At institutional, state, and federal levels there is need for new policies to support the development of distance education programs, units, institutions, and consortia, and the need for procedures to make such policies (Moore and Kearsley, 1996, p. 192); **2)** *Platform Resources Activity Cost*-This activity documents such input costs as: land/facilities/space; expertise/labor; capital; technology and utilities; a.) (Webmaster, computer support, resources or inputs) b.) The Telecomm cost is noted separately as it is a cost passed on to students and therefore balanced by revenue; **3)** *Development Activity Cost*-In a total systems approach to DE, team work in program/course development is important to provide the specialized techniques for course design and other tasks required to meet learner needs. Some of the team tasks include content, graphics, writing, reviewing, revising, distribution and evaluation; **4)** *Delivery Activity* Cost-Delivery is the cost of the instruction (i.e. methods and technology) used in the transfer of knowledge, skills and attitudes occurring in the teaching and learning transaction; **5)** *Course Maintenance and Revision Activity*-This is the cost of upkeep for the entire program. The accepted figure is 10-20% of the total system cost (Smith, 2000); **6)** *Marketing Activity Cost*-20% of total costs are a good starting point for estimating, budgeting and implementing DE programs and courses (Smith, 2000); **7)** *RTPM Linkage Activity*-In activity-based-costing models, this activity defines cost linkages to traditional/existing institutional information systems and newly developed cost information systems for the purposes of aggregation, analysis and distribution. These linkages depend upon management's commitment to accurate and timely cost estimate and documentation, as well as policies and procedures necessary for the activity to properly function. In the model, a recommendation was made to reinvest 100% or $50,000 of the Gain After the Program Initiative back into the model; **8)** *Quality Assurance Activity Cost*-The quality activity is perhaps the most difficult activity to document quantitatively. 1-2% of each other activity cost was assigned to quality assurance; **9)** *Contingency Activity Cost*-This cost is build in for unexpected or chance conditions that may arise; **10)** *Research and Development Activity Cost*-The cost is devoted to new activity exploration and development; **11)** *Total Cost*-This is the sum of all activity, contingency and R & D costs; **12)** *GAPI* (Gain after Program Initiative); **13)** *Analysis*-(i.e. Benefit/Cost, Return on Investment); **14)** *Program Effectiveness*-Value judgments are made using accepted standards or criteria as previously presented for B/C or ROI; **15)** *Program's Future Direction*-This section comprises the actual action-decisions that are made regarding the program and are based on the newly organized information database.

Concepts Used in Conjunction With Real-Time

- Active-reactive-adaptive (ARA) (Patton, 1997, p. 134). Patton uses this phrase to suggest the nature of the consultative interactions between those doing an evaluation such as cost analysis and the intended users of the information such as senior administrators.

- Reflection-on-action (ROA) (Kolb, 1984 in Merriam and Caffarella, 1999, p. 235). In general, this concept involves thinking through and critically examining a situation after it has happened.
- Reflection-in-action (RIA). Reflection-in-action reshapes "what we are doing while we are doing it" (Schon, 1987, p. 26 in Merriam and Caffarella, 1999, p. 236).
- The Limit Concept-Theoretical and Practical Applications (Kraenzel, 1994).

Summary

In the activity-based-costing model being developed, each activity has its own worksheet that summarizes the tasks necessary to complete the activity. The Real-Time Pacing Mechanism (RTPM) is a feature comprised of the linkages to traditional university accounting information as well as new activity-based-costing information. It is therefore, an information aggregation center that serves four basic purposes: 1) to serve as a collection point for traditional and new accounting information; 2) to provide an information processing and sorting function; 3) to serve as a place to conduct information analyses; 4) to provide a distribution point or point of demarcation for reprocessed information to be used for timely and accurate decision-making. The primary function is to create an intermediate step in the information flow that allows the blending of information from the traditional university accounting system and interdisciplinary information from the newly formed activity-based-costing information system. The outcome is a consistent information database for senior level decision-makers. This feature also allows managers to know exactly where an individual class or program stands asynchronously upon demand at the end of each month (EOM).

References

Aaker, D. A. (1998). *Strategic market management* (5th ed.). New York: John Wiley and Sons.

Bolman, L. G., & Deal, T. E. (1997). *Reframing organizations: Artistry, choice, and leadership* (2nd ed.). San Francisco: Jossey-Bass.

Ehrmann, S. C. & Milam, J. H. (1999). *FlashlightÂ cost analysis handbook: Modeling resource use in teaching and learning with technology.* Version 1.0. Washington, DC: The Teaching, Learning, and Technology Group.

Gillies, D. (2000). *Real time encyclopedia online: Frequently asked questions* (*FAQ*): Available: http://www.realtime-info.be/encyc/techno/publi/faq/rtfaq.htm

Hackman, J. R., & Wageman, R. (1995). Total quality management: Empirical, conceptual, and practical issues. *Administrative Science Quarterly, June*, 309-342.

Jenny, H. (1996). *Cost accounting in higher education: Simplified macro-and micro-costing techniques.* Washington, DC: National Association of College and University Business Officers.

Kraenzel, D. G. (1994). *The limit concept-Theoretical and practical applications.* An unpublished term paper for Calculus 142. Las Cruces, New Mexico: New Mexico State University. Mr. Chris Moore, Instructor. April 23, 1994.

Meisinger, R. J., Jr., & Dubeck, L.W. (1984). *NACUBO handbook: College and university budgeting.* Washington, DC: National Association of College and University Business Officers.

Merriam, S. B., & Caffarella, R. S. (1999). *Learning in adulthood: A comprehensive guide* (2nd ed.). San Francisco: Jossey-Bass.

Moore, M. G., & Kearsley, G. (1996). *Distance education: A systems view.* Belmont, CA: Wadsworth.

Patton, M. Q. (1997). *Utilization-focused evaluation: The new century text* (3rd ed.). Thousand Oaks, CA: Sage.

Real Time Encyclopedia Online. (2000). In *The real time magazine online.* Frequently Asked Questions (FAQ): http://www.realtime-info.be/encyc/techno/publi/faq/rtfaq.htm

Rumble, G. (1997). *The costs and economics of open and distance learning.* London: Stirling. Published in Association with the Institute of Educational Technology, Open University.

Smith, T. W. (1998). Distance education is a strategy: What is the objective? *The American Journal of Distance Education. 12*(12), 63-73.

Smith, T. W. (2000). *Discussions held with Thomas W. Smith.* Director of Engineering Telecommunications Programming. Department of Engineering Professional Development. Fall 1999 to Summer 2000. Madison: University of Wisconsin-Madison.

Biographical Sketches

David G. Kraenzel is currently pursuing his Ph.D. degree in the Continuing and Vocational Education Program (CAVE) at the University of Wisconsin-Madison. His area of concentration is teaching and learning leadership in adult education. David holds masters degrees from the University of Illinois in Agribusiness Management and from New Mexico State University. He is on developmental leave from North Dakota State University where he is a faculty member in Extension Agricultural Economics.

Address: 2136 Allen Blvd. #3
Middleton, Wisconsin 53562
Phone: (608) 238-7913
Fax: (608) 263-3160

E-Mail: dgkraenzel@students.wisc.edu

Thomas W. Smith is Director of Telecommunications Programming in the Department of Engineering Professional Development. He has been instrumental in the development of the University's audiographic teleconferencing and satellite communications capabilities. For this work he received the UW-Extension Award for Excellence and national awards from Telecom and ASEE. He has written more than 30 papers and articles on telecommunications and distance education and is a frequent speaker on this topic in the United States and Europe. He received his BS degree from Dartmouth College and MS degree from the University of Wisconsin-Madison.

Address: Department of Engineering Professional Development
432 N. Lake St.
Madison, WI 53706
Phone: (608) 263-7426
Fax: (608) 263-3160
E-mail: smithtw@engr.wisc.edu

We're in This Together: Librarians as Co-Instructors With Classroom Faculty for Electronic Delivery

Mollie D. Lawson, Professor of Library Services
Central Missouri State University

Linda Lillard, Assistant Professor of Library Services
Central Missouri State University

Patricia Antrim, Assistant Professor of Library Services
Central Missouri State University

Susan Morgan, Professor of Nursing
Central Missouri State University

Although not a new concept, distance education has arrived in full force at colleges and universities across the United States. The advent of interactive audio/video technology and the World Wide Web have had a phenomenal impact upon how teaching and learning occur. The technology for providing a better distance learning environment improves almost daily. Especially popular are the web course software packages such as WebCT and Blackboard's CourseInfo. These kinds of approaches to distance learning can almost duplicate the classroom experience. Interactive video/audio feeds, discussion lists, chat rooms and the like provide the dialogue needed between the instructor and the students. At the same time, students determine when to do much of the course work and where, limited only by access to the Internet. The techniques for the best teaching are still in experimental stages, but quality instruction is available for the student who is self-directed and self-motivated.

Needs of Online Learners

Because the technology is still somewhat unfamiliar to many students, online courses often include technology use instruction. Instructors must plan for this added teaching burden and be prepared to work to assist those students who need developmental training in order to learn the course content. Doubtless, the pioneers who are willing to master this new teaching environment are spending many additional hours of course preparation time to assure that the learners have a meaningful instructional experience.

Learning, however, occurs in other arenas outside the classroom. Students are expected to explore independently and to develop critical thinking skills. In the traditional classroom, students leave the class and assume responsibilities for reading assignments, conducting research on topics relevant to the course, synthesizing knowledge as demonstrated in research papers, reports, group and individual presentations, and other learning activities. These "out of class" learning expectations exist in a distance education course, as well.

On a university campus, students have ready access to libraries, laboratories, and study partners. Distance education instructors must find ways to make these sources equally accessible to students who are not physically convenient to one another or to campus academic support mechanisms. Fowell and Levy stated, "Information professionals have the opportunity to take a leading role in developing and delivering the learning support strategies which will be appropriate to this new environment, acting as significant culture change agents in their institutions." The question thus arises: How can we make a level playing field for our distance students?

To that end this paper suggests some possibilities for providing research support to distance learners. At Central Missouri State University, CourseInfo software has been used to deliver web-based courses for the past academic year. A total of 11 courses were offered in the fall of 1999 and the spring of 2000. In each of these courses students have had contact with one another and with the course instructor but not with other campus academic support professionals – that is, not unless the students actually came to the campus. Library research was often the motivation for bringing students to campus.

Librarians as Co-Instructors

In the fall semester of 1999, a faculty member who had initiated the first distance education (DE) course for the Nursing Department asked the library's liaison to that department to participate in the DE course, Nursing 4010, Nursing Research. The librarian readily agreed and was duly enrolled as a co-instructor of the online course. Clearly, this invitation provided an opportunity for the librarian to participate in course instruction to a greater extent than traditional classroom teaching provides. The nursing librarian also provided a web page of useful information resources related to nursing and medical information. In addition to the customized nursing instruction, the Instructional Services librarian also offered general library services to DE students. She prepared a DE web site with information related to interlibrary loan, access to library catalogs and general web resources, how to use the cooperative borrower card at partner libraries across the state, and other services available to students.

After learning the rudiments of the CourseInfo software, the nursing librarian was able to communicate with the students in the class. This consisted primarily of an offer to provide research assistance via email to assist the students in the completion of course assignments. At first the students were a bit reluctant to contact the librarian instructor. There was also some confusion among students regarding what was appropriate to ask. The first exposure to the distance students proved to be mainly a learning experience for the librarian.
The nursing librarian acted as a co-instructor for two DE courses, Nursing 4010, Nursing Research and Nursing 5010, Nursing Theory during the spring 2000 semester. She had direct access to the entire course as presented by the course instructor and as received by the students. The course syllabus, calendar, assignments, and lectures were readily accessible. After reading the objectives and assignments of the course, the librarian co-instructor was able to identify web links that were relevant and post direct links in a "Library Corner" folder on the web course. She posted announcements to the students' announcement board and emailed them an introductory message.

Her goal was to provide them with instructions on how to access web resources and databases that might be useful and to serve as a reference resource for individual research projects related to the course. She sought to provide the same kind of assistance students might have experienced in a face-to-face reference desk exchange.

Distance students have the right to expect services equivalent to those provided to students in the traditional classroom. The goal of an academic library to impart lifelong learning skills through information literacy instruction is no less for DE students than for others. It is vital that that there is adequate planning for delivery of library services in order to ensure a quality distance learning program. To compensate for the lack of direct access to needed services and materials, the librarian working with DE course is likely to provide a more personalized service than that provided to campus library clients.

Results of Our Librarian as Co-Instructor Project

To some degree the objective was hampered by the reluctance of students to "bother" the librarian. It is likely that this is one problem that will diminish as students and librarians become more accustomed to this method of interaction. As an evaluation survey of the class illustrated, despite encouraging messages from the nursing librarian offering to help them, only 52% of the total enrolled actually contacted the librarian directly. This, however, is far more than the 5 to 10% who might have sought out special library assistance in a traditional classroom course. Moreover, each interaction was with the nursing specialist rather than whoever happened to be at the reference desk when the nursing student approached it. Anecdotal experience over the past 10 years supports the opinion that students in web courses are more likely to make contact with the librarian assigned to work with faculty/students in their discipline.

Of those who did ask for individualized help, the web course software allowed for the development of a relationship between the student and the librarian. After the ice was broken, the students felt more comfortable asking other questions and being honest when they did not understand the directions provided or if they ran into technical difficulties accessing information. There was more "real" interaction with students as individuals via the web course than with individuals enrolled in on-campus nursing classes taught in the spring semester.

This experience suggests additional opportunities for librarians to enhance student learning. Because some faculty members use the web course software to augment their communication with students in regular on-campus courses, the web-based tool can be used to provide specialized library assistance for other courses. As a co-instructor, the librarian has access to the class roll, email addresses of enrollees, and all course related information provided by the course instructor. Access to this information gives the librarian increased opportunities to tailor library services to fit the curriculum.

This involvement, however, is not without some risks. It is conceivable the librarian could be overwhelmed by individual requests from students. However, if our goal is to teach students how to be life-long learners, the role of the librarian is, indeed, that of a teacher. We teach them to identify, locate, evaluate, and synthesize information relevant to their needs. Their learning these general information literacy skills can be greatly enhanced by providing instruction in their major fields of study.

The students in the spring distance education course were asked to complete an online evaluation survey posted on the web course pages. This survey, posted on the web course pages, ensured respondent anonymity. The course instructor critiqued the librarian's evaluation instrument and made suggestions to improve it. She also reminded the students that completion of the survey was one of their course responsibilities. Consequently, 100% of the 31 students completing the courses submitted their survey responses. Questions were designed to elicit student attitudes about the librarian's involvement, their satisfaction with general services provided by the library to distance students and their satisfaction with specific services offered by the librarian to them. Overall, the results were very positive. In particular, 74.2% strongly agreed and 25.8% agreed somewhat that having a librarian available to assist in their research via email or telephone is a service they would like to have for other courses. The same figure, 71% strongly agreed that they felt comfortable asking for assistance from the librarian working with the course. Agreeing somewhat were 26% and disagreeing somewhat were 3%. In addition, 52% strongly agreed that because a librarian was involved in the course, they will ask for her assistance for future research needs while continuing their degree at Central. Agreeing somewhat were 39% and disagreeing somewhat were 9%.

Somewhat surprising were the less enthusiastic results to questions regarding their need both for a real time interactive session with the librarian and an online tutorial they could utilize on their own time. Responses for the interactive session indicated 36% strongly agreed with the idea, 42% agreed somewhat, 16% disagreed somewhat, and 6% strongly disagreed. Those desiring an online tutorial included 45% who strongly agreed, 39% who agreed somewhat, 13% who disagreed somewhat, and 3% strongly disagreeing. Despite the mixed opinions, both of these methods are planned for implementation in the fall semester. Optional comments were provided by 72% of the students. In general the comments were positive. One student indicated a need for more interaction via email and postings on the announcements board than were provided.

Clearly, one need perceived by almost all of these distance students was access to online resources in full text. Currently, the ability to provide this is dependent upon availability and cost factors. Copyright issues related to full-text access are also still unresolved.

Nevertheless, librarians and classroom faculty truly must be in the business of education in partnership with one another. If the classroom instructor does not seek out the librarian, we may need to make the overtures toward greater involvement. Without doubt, the technology to support distance learning offers new opportunities for librarians to plan a more focused and direct role in the teaching and learning that occurs on college campuses.

References

Fowell, S. and Levy, P. (1995). "Developing a new professional practice: A model for networked learner support in higher education." *Journal of Documentation, 51*(3), 271-280.

Gover, H. (July 13, 1999) *ACRL guidelines for distance learning library services* [Online]. Available: http://caspian.switchinc.org/~distlearn/guidelines/ Accessed May 24, 2000.

Biographical Sketches

Mollie Lawson is Professor of Library Services and Director of Technical Services at Central Missouri State University, Warrensburg, MO. She serves as the library liaison to the Department of Nursing.

Address: James C. Kirkpatrick Library
Room 2262
Central Missouri State University
Warrensburg, MO 64093
E-mail: mollie@libserv.cmsu.edu
URL: http://library.cmsu.edu/mollie/mollie
Phone: (660) 543-8780
Fax: (660) 543-4071

Linda Lillard is Assistant Professor of Library Services and Instructional Services Librarian at Central Missouri State University, Warrensburg, MO. She serves as the library liaison for distance education courses.

Address: James C. Kirkpatrick Library
Room 2450
Central Missouri State University
Warrensburg, MO 64093
E-mail: lillard@libserv.cmsu.edu
URL: http://library.cmsu.edu/disted/tech/IT.html
Phone: (660) 543-4149
Fax: (660) 543-8001

Patricia Antrim is Assistant Professor of Library Services and Government Documents Librarian of Central Missouri State University, Warrensburg, MO. She has been a member of the Faculty Senate distance Education Committee for three years.

Address: James C. Kirkpatrick Library
Room 2448
Central Missouri State University

Warrensburg, MO 64093
E-mail: antrim@libserv.cmsu.edu
URL: http://library.cmsu.edu/paa/homepage.htm
Phone: (660) 543-4145
Fax: (660) 543-8001

Sue Morgan is Professor of Nursing at Central Missouri State University. She developed the first courses in the department delivered totally online.

Address: Department of Nursing

University Health Center
Central Missouri State University
Warrensburg, MO 64093
E-mail: morgan@cmsul.cmsu.edu
URL: http://www.cmsu.edu/nursing/homepage.htm
Phone: (660) 543-8305
Fax: (660) 543-8304

Bridging the Gap Between Practice and Knowledge: The Learning Institute for Nonprofit Organizations

Andy Lewis, V.P. Program Development
The Learning Institute for Nonprofit Organizations
University of Wisconsin Extension

Terry Gibson, Ph.D., Director
Program Development and Evaluation
University of Wisconsin Extension

Katie Burnham, President
The Learning Institute for Nonprofit Organizations
Society for Nonprofit Organizations

Introduction

The Learning Institute for Nonprofit Organizations (LI) was created with the mission of "using technology to provide learner focused educational opportunities that transform nonprofit organizations and the communities they serve." The instructional design of the LI programs is based on the premise that we want to change organizational behavior. Our programs are geared toward practitioners who are already actively working in the nonprofit sector and recognize the need to build their organizational management and leadership skills but demand convenience for their professional improvement.

Many educators and trainers assume that if a motivated learner is exposed to effective training, then their actions and practice will be improved. In fact, the research would indicate that only the *potential* for improved practice would occur in this environment. This paper outlines the ways in which the Learning Institute has attempted to measure its impact on practice within the nonprofit sector.

Program Topics

The curriculum topics that were selected were based on a needs assessment conducted during the pilot phase of the project (a survey of nonprofit organizations in the state of Wisconsin) and a review of the existing degree programs. We were interested in determining the needs as defined by the practitioners as well as identifying how those needs had been defined by higher education. In addition, we wanted to identify if there were any emerging educational needs that might have been overlooked by other academic institutions and practitioners.

Instructional Design

The instructional design of the LI programs integrate numerous components with the intent of appealing to diverse adult learning styles and to increase the likelihood that new knowledge will be transformed into informed action within nonprofit organizations.
Most of these components were evaluated highly by participants pursuing the "Certificate of Excellence in Nonprofit Leadership and Management" (See Table 1).

Table 1
CEU/Certificate Participants Follow-Up Evaluation
Usefulness of Program Components (For Implementation Purposes)
Rated On A 1-5 Scale:
"How would you evaluate the following program elements in terms of their usefulness in assisting you with implementing what you learned?"

Tool:	**Very Useful (5)**	**(4)**	**(3)**	**(2)**	**Not Useful (1)**	**Weighted Average**
Organizational Assessment Tool	49%	31%	20%	0%	0%	4.29
Faculty Presenters	49%	38%	9%	0%	4%	4.28
Pre-Program Readings	45%	30%	26%	0%	0%	4.19
Facilitated Group Activities/Networking with other learners	47%	32%	17%	2%	2%	4.19
CEU/Certificate Assignments	43%	36%	19%	2%	0%	4.19
Video Case Study	45%	32%	17%	4%	2%	4.13
Questions & Answers	36%	45%	11%	4%	4%	4.04
Print Materials	24%	41%	28%	6%	0%	3.83
Annotated List of Web Resources	30%	24%	26%	15%	4%	3.67
Bibliography	13%	32%	40%	9%	6%	3.36
Average Weighted Rating						4.01

Participant Satisfaction

Given the fact that the Learning Institute's future is highly reliant on "participant fees" it was important to be able to deliver educational programs that would appeal to the end user that was investing time and money in their professional improvement. The overall satisfaction ratings (See Table 2) would indicate that we delivered an educational product that was more then acceptable. In addition, the participant ratings have increased for each year that the LI has offered the programs.

Table 2
Participant Ratings (1998-99)
"What is your overall rating of the program?" __Excellent(4) __Good(3) __Fair(2) __Poor(1)

Program #	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**All 8**
Average Score	3.2	3.3	3.6	3.1	3.6	3.5	3.4	3.1	3.4

Transition From Knowledge to Informed Action

Following each of our satellite programs, we asked participants to evaluate their comprehension of the learning objectives that were established for each of the 8 satellite programs. When we asked participants whether we met the learning objectives established for the programs, average evaluation scores were never below 4.0 on a 5-point scale (See Table 3).

Table 3
Average scores for learning objectives:

Program	**OBJ #1**	**OBJ #2**	**OBJ #3**	**OBJ#4**	**AVG**
#1	4.2	3.9	4.0		4.0
#2	4.1	4.1	4.0		4.1
#3	4.1	4.3	4.2		4.2
#4	4.1	4.2	4.2		4.2
#5	4.3	4.4	4.2		4.3
#6	4.4	4.3	4.2		4.3
#7	4.2	4.3	4.2	3.9	4.2
#8	4.1	4.1	4.1		4.1

After completion of the national rollout of the certificate series in May of 1999, it seemed logical to try to determine if in fact any "transformation" occurred in the organizations that participated in the training. This is obviously an ambitious undertaking and one that might be a bit premature given the time it takes to implement organizational change. None-the-less, we have begun that process.

Following each of the 8 satellite-based educational programs, participants were asked the following open-ended question: ***What are you ready to do differently as a result of this program?*** For an "open ended" question, the number of people that were able to identify a specific action immediately after participation in the program was astounding: An average of 71% of respondents were able to identify at least one action for each program. This ranged from 67% (Resource Development) to 77% (Financial Empowerment). The number of participants returning their evaluation ranged from 966 to 395 (See Table 4).

Table 4
"What are you ready to do differently as a result of this program?"

Program	**% Able to identify at least one action item**	**# Of surveys returned**
Strategic Planning	71%	n=966
Resource Development	67%	n=699
Board Development	71%	n=749
Marketing	70%	n=845
Financial Empowerment	77%	n=566
Social Entrepreneurship	70%	n=549
Volunteerism	72%	n=591
Strategic Alliances	68%	n=623
Average for 8 programs:	71%	

In the first year of offering the Certificate program approximately 44% of the participants (approximately 1,284 individuals) elected to sign up for all 8 programs. In addition there have been just over 200 participants who chose to enroll in the "Certificate of Excellence in Nonprofit Leadership and Management" (requiring the successful completion of additional assignments and an additional administrative fee of $100). Subjective analysis of the assignments from Certificate participants would allow one to conclude that participants took this assignment seriously and constructed some high quality action plans after utilizing the organizational assessment tool developed by the LI. But more importantly, we now have a means of measuring the impact of our programs on practice. Since Certificate participants told us in detail what they intended to do differently in their action plans (which included a time-line), we could now go back and survey participants on their progress! We conducted a mail/e-mail survey of the first 80 people who had successfully completed the Certificate program and have received 48 responses (60% response) as of November 1, 1999. We provided each certificate participant a copy of one of the 8 action plans (randomly selected) that they had submitted as part of their assignment and asked them to select a statement which best reflected their progress on the plan:

Table 5
Progress on Action Plan (3 months after completing the series)

Response:	**%**
"I have completed the task in a satisfactory manner"	8%
"I have made good progress towards completing this action"	40%
"I have made a little progress toward completing this action"	27%
"I have made no progress towards completing this task but still plan to address it"	13%
"I have no plans to complete this activity"	10%
No Response	2%

The results indicate that 75% of the participants had actually started to take some level of action on the plans that they had prepared during the series (See Table 5). About half of the Certificate recipients had completed or made significant progress towards completing their action plans. Given the timing of this survey, the results are encouraging. This survey was administered three months after the completion of the certificate series and yet many participants had elements of their action plan that were long term in nature.

Biographical Sketches

Andy Lewis is a professor at the University of Wisconsin Extension where he currently serves as Executive Vice President of Program Development for the Learning Institute for Nonprofit Organizations. Lewis began employment with the University of Wisconsin Extension in 1983 as a community-based educator where he has worked with many nonprofit organizations that focus on community development, economic development, local government and the environment.

Address: The Learning Institute for Nonprofit Organizations
6314 Odana Road, Suite 1
Madison, WI 53719
E-mail: ablewis@facstaff.wisc.edu
URL: http://www.uwex.edu/li/lewis.html
Phone: (608) 274-2192 Ext. 223
Fax: (608) 274-9978

Katie Burnham is co-founder and President of the Society For Nonprofit Organizations. She currently serves on the University of Wisconsin - Extension Board of Visitors, is board chair of the Wisconsin Leadership Institute Board, and is Secretary of the Board of Wisconsin Special Olympics. For the past two years, the Nonprofit Times monthly newspaper has named Burnham as one of the country's "50 most powerful and influential people in the nonprofit sector." In addition, in 1999 she was honored by the United States Distance Learning Association with the "Most Outstanding Achievement by an Individual in Lifelong Learning" award.

Address: The Learning Institute for Nonprofit Organizations
6314 Odana Road, Suite 1
Madison, WI 53719-1141
E-mail: kburnham@execpc.com
URL: http://www.uwex.edu/li/burnham.html
Phone: (608) 827-9476 Ext. 226
Fax: (608) 274-9978

Professor Terry Gibson, Ph.D., is the Director of the Program Development and Evaluation Unit and the Distance Education Unit for Cooperative Extension, University of Wisconsin Extension. He is also a faculty member with the School of Human Ecology on the U.W. Madison

Campus. Terry received both his BA and MA from Michigan State and his PhD from the University of Wisconsin-Madison along with additional training at the Distance Learning Center at the Open University in the United Kingdom. In 1997, Terry Gibson was a co-recipient of the Educational Leadership Award from the WI Association for Adult and Continuing Education. In 1999, the Distance Education Consortium presented Terry Gibson with the "1999 Irving Award".

Address: University of Wisconsin-Extension
Program Development and Evaluation
613 Extension Building
432 N. Lake Street
Madison, WI 53706-1498
E-mail: terry.gibson@ces.uwex.edu
URL: http://www.uwex.edu/li/gibson.html
Phone: (608) 262-4877
Fax: (608) 262-9166

A Case Study of a Large-Scale Use of Asynchronous, Multinational, Collaborative Learning at the Graduate Level

José Rafael López-Islas, Director
Research and Educational Technology

Rosa María Megchun-Alpízar
Research Associate

Noemí Ramírez-Angel
Research Associate

Monterrey Tech Virtual University

This paper analyzes the experience of the Monterrey Institute of Technology (Monterrey Tech)'s Virtual University with the use of distributed collaborative learning at the graduate level. Monterrey Tech is a Mexican private university system with campuses in several cities in Mexico, and over one hundred receiving sites in as many cities in Mexico and nine other countries in Latin America. Throughout its Virtual University, MT offers a variety of educational services to over 52,000 students per year. Over 5,000 of them work on graduate degrees in business, engineering, computer science and education.

The Virtual University's educational model has four components: (1) lectures, that take place either as a video session delivered continent-wide through satellite or through a combination of Internet and CD-ROM; (2) autonomous learning activities carefully designed from an instructional design standpoint; (3) collaborative learning activities, conducted mostly in an asynchronous mode, using a variety of Internet tools; and (4) tutoring, that allows participants to interact with an expert and to receive continuous feedback and support on a timely fashion.

The focus of this paper is collaborative learning, which is probably the least understood component of the model as well as the newest. After a few years of experience with collaborative learning, it was suspected that the kind of collaborative learning activities the students were engaged in were not as productive as they were supposed to be according to the literature. This contradicted the abundant evidence offered by the literature about the benefits of collaborative learning.

A research project aimed at analyzing collaborative learning from both a quantitative and qualitative perspective was developed. This project included the quantitative analysis of students' participation in asynchronous collaborative learning activities as well as the qualitative analysis of students' learning processes, using Gunawardena, Lowe & Anderson's (1998) model for the analysis of social construction of knowledge. Students were also interviewed in order to know their perceptions about collaborative learning as well as their learning practices.

Quantitative Analysis

Graduate student participation in collaborative learning activities was analyzed for the entire year 1999. The analysis included all graduate programs in engineering, computer science and business. During 1999 around 100 graduate courses were offered with a student population of approximately 10,000 students/course. A total of 171,500 messages related to collaborative learning activities were produced and exchanged by these students, using four different computer platforms: HyperNews, Learning Space, Newsgroups, and a CGI-based threaded discussion software.

The analysis of these messages suggests that student's participation is heavier during the first part of the week (Monday through Wednesday) declining notoriously during the weekend. The data also show two peaks for student participation during the day: one around 8 and 9 pm, mostly from Monday to Wednesday, and another around noon, especially during the weekends. These results suggest that most students work on their collaborative learning activities from the workplace right after work hours, or from home during the weekends. As expected the distribution of messages by month varies according to the academic calendar, with peaks in February/March, May/June, and September/October.

The analysis of messages by course revealed that whereas in some courses student participation was heavy (up to 73 messages per student during the entire course), in other courses participation was null. Around a third of the courses were labeled as "high participation," with over 20 messages per student, another third as "low participacion," (between 5 and 20 messages per student), and the remainder third as "null participation" (less than five messages per student). While looking for potential reasons for this disparity, it became evident that there were important differences in the instructional design of those courses with high student participation. For example, these highly participative courses included specific directions about how to participate, as well as to what was expected from the students. Besides, participation in these activities contributed with a considerable percentage of the final grade. Students could also obtain technical support for the use of the different technologies. Last but of no less importance, it was found that faculty members got actively involved in collaborative processes, both moderating group processes and modeling collaboration behavior.

A qualitative analysis was conducted to answer the obvious question about whether such an intensive participation could be taken as a synonym of high quality collaborative learning practices. The results of this analysis are presented in the next section.

Qualitative Analysis

According to the literature (Slavin, 1995; Gunawardena, Lowe and Anderson, 1997; Pinheiro, 1998), collaborative activities enrich the learning experience by promoting the social construction of knowledge. Learning is no longer viewed as a mere transmission of knowledge from a teacher to a student, but a process of knowledge construction in which each participant contributes and benefits from the ideas shared by the group.

In order to explore to what extent participation in collaborative learning experiences was a process of social construction of knowledge, a qualitative analysis was conducted, using Gunawardena, Lowe & Anderson's (1998) interaction analysis model for examining social construction of knowledge in computer conferencing.

A total of 1,340 messages were analyzed using the model. This was the total number of messages exchanged by 24 groups (five participants per group), during the process of participating in a collaborative learning activity. The activity included the construction of conceptual maps based on a reading, discussing a case, and writing a brief article based on Internet and library research. The activity took place between February 2 and February 24, 2000.

Each group worked individually, which made it possible to compare group processes aimed at achieving the same goal. The number of messages needed by each group to reach its goal varied from 25 to 163, with a mean of 61 messages. Interestingly, despite the notorious difference in the number of messages per group, all the groups seemed to follow the social construction of learning process as proposed by Gunawardena, Lowe & Anderson (1998).

This model has five phases: sharing/comparing information; discovery and exploration of dissonance; negotiation of meaning/co-construction of knowledge; testing and modification of proposed synthesis; and agreement statements of newly constructed meaning. All the groups reached the final goal. However, only five out of the 24 groups passed through all the phases. Generally speaking, the second phase (discovering dissonance) was the one with the least amount of messages, followed by the fourth phase (testing and modification of proposed synthesis). This finding could be attributed to cultural reasons: Latin culture has not traditionally favor the open expression of disagreements. Therefore with few disagreements openly expressed, there is no need to extensively test and modify group proposals.

The analysis showed that even though there were important differences in the number of messages required by each group to achieve its goal, all of them followed a process of social construction of knowledge. An important caveat must be mentioned here: the model analyzed the process but not the quality of the products. This means that even though all the groups were successful at socially constructing knowledge, not all the products were of the same academic quality.

As a result of the analysis, three additional categories were proposed to complement Gunawardena, Lowe & Anderson's model: housekeeping and organizational messages, and feedback/moderating messages from the faculty. These three categories accounted for 29 percent of the total number of messages. An interesting issue in this case was the multinational nature of Monterrey Tech's Virtual University which in this case was shown by the fact that students participated from 29 different cities in four countries of Latin America.

This analysis was complemented by a series of interviews with students, aimed at collecting their opinions and perceptions about collaborative learning. The results of the interviews are presented in the next section.

Student Opinions

A total of 288 structured interviews were conducted during November and December of 1999, with a sample of Virtual University students, from 16 cities in Mexico. The purpose of the interviews was to collect students' opinions and perceptions about the Virtual University's educational model. An important section of the study focused on collaborative learning. The study found that most students recognized the value of collaborative learning activities as an opportunity for organized interaction with colleagues from different parts of the world, and as a means for the creation of social relationships. Students reported their best experiences with collaborative learning as those where knowledge was constructed with the input of a diverse group of people, with clear instructions, guidelines and outcomes, related to relevant topics, and with adequate support from faculty and tutors (as moderators and models).

Students' reported as a positive characteristic of asynchronous collaborative learning the flexibility to work at any time and from any place. However, on the negative side, they reported that frequently groups fail to adequately organize themselves, which usually leads to an unbalanced workload for the members of the team.

Conclusions and Recommendations

Monterrey Tech's experience with asynchronous collaborative learning at the graduate level suggest that students' participation could be very intense if the design of the activities is adequate. This design should also provide guidance for the development of a productive social construction of knowledge process. However, design by itself is not enough: faculty and tutors need to play an active role during the group process, acting both a moderators and as models of collaboration behaviors. Gunawardena, Lowe & Anderson's (1998) model for the analysis of social construction of knowledge processes proved to be useful, although some messages had to be classified in three new categories (housekeeping, organizational and feedback).

Some recommendations could be drawn from this experience: collaborative learning activities should be perceived by students as relevant, and the instructions, guidelines and outcomes should be clearly communicated to the students. Asynchronous collaborative learning works better with small groups (between four and six people), preferably integrated by members from different cities or professional backgrounds, in order to create the type of diverse teams that students appreciate. Finally, faculty members (instructors and tutors) should actively engage in the process, facilitating the group work and modeling the kind of behaviors expected from the students.

References

Gunawardena, Ch., Lowe C., & Anderson, T. (1997). Analysis of global online debate and the development an interaction analysis model for examing social construction of knowledge in computer conferencing. *Journal of Educational Computing Research, 17*(4), 395-429.

Pinheiro, E. (1998). Collaborative learning. In D. G. Oblinger & S. C. Rush (Eds.), *The future compatible campus* (pp. 118-130). Bolton, MA, EE. UU.: Anker.

Slavin, R. (1995). *Cooperative learning*. Needham Heights, MA. EE. UU: Allyn and Bacon.

Biographical Sketches

Jose Rafael López-Islas has a Bachelor of Science in Communications from Monterrey Tech (Mexico); a Master of Science in Mass Communication from Oklahoma State University, and is a doctoral candidate in Communication Technology and Policy from The University of Texas at Austin. He is an Associate Professor of Communication at Monterrey Tech, and Director for Research and Educational Technology at Monterrey Tech´s Virtual University. He is the author or co-author of several papers presented in international conferences, such as the Pacific Telecommunications Council (Honolulu), International Communication Association conference (Albuquerque), CREAD conference (Fort Lauderdale), University of Texas Telecommunications in Education conference (Brownsville, TX), as well as other international conferences on distance education in Cartagena, Colombia, Sao Paulo, Brazil, and Montevideo, Uruguay.

Address: Universidad Virtual del Tec de Monterrey
Suc. De Correos J
64849 Monterrey, N.L. Mexico
(52-8) 328-4109
E-mail: jrlopez@campus.ruv.itesm.mx
URL: http://convergencia.ruv.itesm.mx

Rosa Maria Megchun-Alpízar has a Bachelor of Science in Communications from Monterrey Tech (Mexico). She is currently working on her Master of Science in Communication at Monterrey Tech and has been a Research Associate at the Virtual University since 1998. She is co-author of papers presented at the University of Texas Telecommunications in Education Conference (Brownsville, TX), and in several conferences in Mexico.

E-mail: rmegchun@campus.ruv.itesm.mx

Noemí Ramírez-Angel has a Bachelor of Arts in Business Administration from Monterrey Tech, and is currently working on her MBA. She has been a Research Associate at the Virtual University since 1998. She is co-author of papers presented at the University of Texas Telecommunications in Education Conference (Brownsville, TX), and in several conferences in Mexico.

E-mail: nramirez@campus.ruv.itesm.mx

Why You Need a Training Management System and How to Get the Right One

Lee McCaffrey, Vice President
Consumer Lending Training
PNC Bank

Paul Dickerson, Assistant Vice President
Branch and Business Banking Training
PNC Bank

John Martin, Vice President
Global Operations
Pathlore

The Problem

In the middle of 1999, the Training Department of PNC Bank's Regional Community Bank (RCB), one of seven divisions within PNC Financial Services Group, was trying to solve problems mirrored throughout hundreds of other corporate training departments. How do you train thousands of geographically diverse sales representatives on new products, policies, or procedures? How can you track and report on who has taken the required classes? How can you measure learning? In this information session, you will gain insight into how one training department obtained agreement to a purchase and install a training management system (TMS), or a learning management system, to be used as a solution to a myriad of training issues. Hopefully, you will be able to use some of the techniques and processes we used to justify the selection of a TMS.

What Is a Training Management System?

Simply stated, a training management system is a multi-faceted system that launches CBT or WBT courseware, tracks participation, and records usage of participation. In our search for the right TMS, we found this definition expanded to include constant innovations and acquisitions within the industry. From the beginning of our search to our final selection, the definition of training management systems changed to also include competency management, test administration, e-billing, developmental plan recommendations, resource management, and handling third party content providers. Instead of becoming bewildered by the rapid changes that occurred in a span of a few months, we saw the constant innovation as an ally to our selection process.

Step 1: Understanding Business Needs

When you begin your search, you will find dozens of capable systems from some very good providers. Each product has its own particular strength or niche. So before you begin talking to vendors, determine what your exact needs are! Take time to engage your own business owners about the needs of the business. Coming to a shared understanding as to the needs of your business increases your chances that your business owners will accept the solution you offer. As an example, discussions with RCB business owners brought alignment around these business needs that we were facing: high turnover; lengthy training cycle times for development and delivery; changing technologies; the need to migrate to competency based performance process; the need to reduce development costs for CBT (currently on CD-ROM).

Step 2: Aligning With the Vision

The second step we took was to ensure that the solution we found aligned with the vision of PNC Bank. Our vision, to "... be a premier financial services marketing company reflecting in our actions a deep understanding of the needs, values and aspirations of our customers, employees, communities and shareholders." PNC's Regional Community Bank, which our training group is responsible for supporting, is striving to achieve that vision by striving toward strategic outcomes. These outcomes were expressed in four definitive outcome statements:

1. We will win the hearts and minds of our customers.
2. We will win the hearts and minds of our employees.
3. We will become indispensable to the communities we serve.
4. We will become the lifeblood of the bank and add value for our shareholders.

Our intention, to choose a training management system, had to address the business needs and address the outcome statements. Choosing a TMS would directly address outcome statements two and four. Statement two, win the hearts and minds of our employees, directly addressed an opinion exposed by a recent employee survey that showed a desire by all employees to have access to continual training. Statement four become the lifeblood of the bank and add value for our shareholders was a direct challenge by the bank to reduce training costs yet increase effectiveness. A TMS system would be an important tool to directly achieving those outcomes.

Step 3: Knowing the Future

Knowledge of and alignment with your company's strategic plans is paramount to justifying your business case for a TMS system. RCB Training's alignment with our business owners enabled us to have a voice in the future direction of the business. At the beginning of 1999, our business leaders were on the cusp of making a decision that would affect the business for years to come. The question in front of the management team was, should the RCB upgrade their technology from the 1980's vintage 286 desktop PC with Controller technology to a web enabled system? The expenditures required to rewire and equip 730 branches with new technology were staggering. The business case for the expenditure could not be solely based on the need to improve technology. One question was repeatedly asked, what would be the incremental income earned from this improvement, or, what would be the savings in expenses? By being a partner in the decision making process, RCB Training was able to help justify the capital upgrade by showing the benefits a TMS system would have on reducing expenditures, increasing efficiency, and improving employee satisfaction.

The direction was set, find a TMS system and find one fast. A group was formed that included representatives from training, human resources, and MIS and had only a few months to find a provider and make a recommendation.

Selecting the Right TMS for Your Company

Step 4: Researching TMS Vendors

Our next step in locating a TMS system was to learn about the current state of the TMS business. Indispensable to our research was information provided by Brandon Hall, Elliot Masie, and other information providers such as Training Media Review, Inside Technology Training, and PCWeek Online. A book by Brandon Hall, Ph.D., *Training Management Systems, How to Choose a Program Your Company Can Live With* is a good starting point or you can check out his website at www.brandon-hall.com. A very good article by Dr. Hall on the steps in choosing a TMS system "*Live E-Learning*" is at http://www.internetconnect.net/~bhall/lel/lel.html. Another pioneer in e-learning is Elliott Masie's. Visit his website at www.masie.com for in-depth articles about e-learning. Another good source we used PCWeek Online's article titled, "*Anytime/anyplace learning, Shoot-Out puts Web-based learning management systems to the test.*" You can find this article at www.zdnet.com/products/stories/reviews/0,4161,2391382,00.html. The Gartner Group is another excellent source for comparing TMS providers.

Keep in mind during your research that the author of each article you read usually chooses what he or she feels to be the best TMS system. One article placed Pathlore's Phoenix as the best system, another article voted for Saba, the PCWeek Online shoot out article said Docent is the best. Which do you choose? Which is the best? Your decision will be based on meeting your business needs not just on an article's recommendation.

Based on our business needs, the vision of the bank, and our research, we came up with six targeted wants from a TMS that would drive our search for the right vendor:

1. Competency based – job modeling methodologies.
2. Administration management – Registration, surveys, reporting and tracking.
3. Web Based Training.
4. Open architecture – modular components.
5. Authoring Tools usable by in-house instructional designers.
6. Test management functionality that includes skill and competency testing.

Decide which companies best meet your business needs and warrant further review. At PNC Bank we summarized the information on the top nine companies into the table like the one shown below:

Company Profile	Vendor #1	Vendor #2	Vendor #3	Vendor #4
Contact Name/Title				
Address/Phone				
Architecture – hardware/software				
Firewall delivery capability				
Systems file structure				
Types of media supported				
Chat, threaded discussion				
Authoring				
Systems Interfaces				
System Functionality				
Competency Assessments				
Level 2 Test Capability				
Capability to capture learning event cost data				
Management of facilities				
Management of library				
Test capability				

Table 1. Example of Vendor Summary

The summary form contains demographic data, system capabilities, MIS specific questions, and the ability of the system to meet business needs. Your list will undoubtedly have attributes to compare and different vendors than we selected.

Step 5: Vendor Presentations

Next contact the vendors for a demonstration. We partnered with our purchasing department to send a Request for Proposal (RFP) to each of vendors we wished to interview. Attached to the RFP should be a list of questions you want the vendor to specifically answer. Table 2 has a list of 17 questions PNC Bank wanted answered by each vendor. The questions were developed as a result of the analysis of our business needs and by our MIS department. Your list of questions will reflect your business needs and system requirements. While interviewing the vendor, review the questions with them, view a demonstration of their system, and ask questions about the company's history, future plans, and funding.

Why should you ask about the vendor's past, future and funding? During our interview process, one vendor began his presentation with the statement saying the company just merged and changed names. We began a line of questioning as to the company's vision and strategy to increase market share. We went online to find articles about the name change and discovered that the company strategy had changed to become a content provider and that the TMS system would not be a priority within the new company. That information was enough for us to rank that particular company low. We also found another provider was having problems obtaining funding for future system enhancements, we were concerned with the ongoing viability of the company and again ranked that company low.

1. Does the system manage both instructor led and online training?
2. Will the system integrate into our existing HR management system?
3. To what degree can data be customized into reports or exported?
4. How many administrative levels can your system support?
5. Explain the front-end administrative system from the users view… is it self service oriented?
6. Is there an authoring tool embedded within the system? Templates for design?
7. Is your system file or database driven?
8. Will you provide implementation support?
9. Does the system allow for curriculum and certification management?
10. Does the system have competency management and development capabilities?
11. Can you system assess skill gap analysis and define curriculum path?
12. Does the system require a central server or servers to deliver the training material to users? If so, what are the minimum hardware and software requirements.
13. Detail the minimum hardware and software configuration requirements for the clients.
14. Detail your system's use of streaming audio and video, if any, and what network bandwidth you recommend to support it.
15. How will the application be deployed to the call center. Is telephony integration provided?
16. Do you have scalability measurements. What is the maximum number of concurrent users
17. Have you integrated your offering into existing applications of your customers? If so, by what means?

Table 2 – Interview Questions Developed by PNC Bank

The interview process, which included the entire RCB selection team, allowed approximately 2 hours per vendor. Each selection team member was given a sheet outlining the business and system needs and space in which to score the vendor's answers. After the interviews, the selection team debriefed to evaluate the vendor responses. We contacted the vendors and gave them our candid feedback as to the quality of the presentation and as to whether they were still under consideration for selection. A fact that became apparent to the team was no one vendor was able to meet all of our requirements. Some vendors were strong in the competency management area, another vendor was strong on systems integration, another vendor was strong on registering and reporting class attendance, while another vendor was strong on authoring CBT courses. One of our requirements was the TMS be web based in order to align with RCB's future web based computer platforms. This requirement eliminated many vendors who were still committed to client/server architecture.

Step 6: Vendor Site Visits

The top four candidates were then asked to host a site visit by the selection team. During the visit, we asked to meet key people (CEO, programmers, customer service, and sales personnel), tour the site, and examine the technology in use. We hoped to view the user interface, how to manage curriculum, how the registration system worked, and how reporting was done by the system. In addition to these objectives, each vendor was sent a list of scenarios we wished to see performed on their system. One scenario was to demonstrate launching existing courseware, another was to demonstrate how the competency assessment process could be used to select team members possessing specific skills and competencies, and the third scenario demonstrated the authoring system.

This site visit step proved to be invaluable, two of the four vendors were unable to perform the scenarios as asked and the visit of their sites yielded qualitative data about their company and methods of operation that were not apparent in any of the literature or prior discussions. One vendor pleasantly surprised us by disclosing to us two acquisitions that would fill gaps within their TMS system These acquisitions filled in large gaps in their TMS system. After the site visits, we then reduced the list of vendors to three finalists.

Step 7: Final Presentations

At this point, we invited the remaining vendors back for a final presentation to make sure that they were fully aware of our business needs and to begin discussing the price. Again, this process showed us which vendor was better prepared. Vendor #1 came in with a very thorough proposal and had adjusted their proposal as a result of our site visit. Pricing was very detailed in their final proposal. Vendor #2 appeared to have assumed that they had already won the competition. They did not come prepared for the final presentation and where unprepared to discuss pricing strategies. As we questioned the initial price quote, additional charges surfaced, and the credibility of the proposal became suspect. Vendor #3 was not prepared to discuss pricing and also revealed they were at least one year away from delivering exactly what we wanted. They wanted us to be their alpha and beta site while they developed their product!

When negotiating price, consider the costs of license fees, user (per seat) fees, maintenance fees, communication fees, professional services fees, training expenditures, travel expenditures, pass through costs for third party content providers, hosting costs, and the costs for administrative support. To adequately compare the final offers, look at what the costs will be over 1 year, 2 years and 3 years. Our final selection at first proved to be most expensive for the first year but had dramatic cost reductions during the next two years.

Conclusion

Which vendor will you choose? Expect a lot of "WOW" moments when you are out looking for a training management system. You will most likely be amazed at the capabilities, the look and feel, and the power of some of these systems. When you have completed each step of the process, get your team together and review what you have just seen. Our team went back and forth many times. Every time we saw another vendor, we came out thinking they had the answer to our problems. After sitting through hours and hours of meetings, traveling thousands of miles, looking at screen after screen, and discussing the strengths and weaknesses of each company, we finally came to a mutual group decision. Pathlore's Learning Management System was acclaimed by our group to have the best features for our needs along with the experience, longevity, funding, vision, and implementation skills that we felt separated them from their competitors.

Biographical Sketches

Paul Dickerson has been a facilitator of training for more than 11 years. In his role at PNC Bank, he is responsible for managing the design and development of training initiatives impacting the RCB's distribution network and Business Banking group, as well as managing the delivery of training for Business Banking. Currently, Dickerson is managing the implementation of the training management system for the RCB. He also co-managed the design, development, and implementation of a distance learning curriculum for new hire positions within the branch system. Prior to PNC Bank, Dickerson worked at Chemical Bank as a regional training manager. He is also an instructor for the American Institute of Banking.

Address: PNC Bank
28th Floor – RCB Training
620 Liberty Avenue
Pittsburgh, PA 15222
E-mail paul.dickerson@pncbank.com
Phone (412) 762-9103
Fax: (412) 762-4990

Lee McCaffrey has been involved in the banking industry for 21 years. At PNC, Mr. McCaffrey is responsible for managing the design, development and delivery of all training initiatives impacting the sales, origination, and servicing of the bank's consumer loan portfolio. He led the development team for the bank's first multimedia CBT and web delivered training programs at PNC Bank. While at PNC, McCaffrey has also served as the Business Banking training manager, an instructional designer for mergers and acquisitions, and facilitator. He is an instructor and former board member of he American Institute of Banking and is currently a board member of Banker's Exchange, a nationwide banking group dedicated to the education of bankers. McCaffrey holds a bachelor's degree in education from Indiana University of Penna. and is currently completing his master's degree in Communications and Information Systems at Robert Morris College in Pittsburgh, Pennsylvania.

Address: PNC Bank
Consumer Lending Training
2730 Liberty Avenue
Pittsburgh, PA 15222
E:-mail lee.mccaffrey@pncbank.com
Phone (412) 762-8054
Fax: (412) 768-4530

John Martin, as vice president of global operations, helped establish all of Pathlore's international subsidiaries, and he is responsible for all Pathlore product marketing and sales support both nationally and internationally. He serves on the board of directors of Pathlore Software PTY Ltd. in Australia, Pathlore Software Srl in Italy and Pathlore Software UK. He also oversees the company's South African and Australian distributors. With 12 years of experience in computer based training, Martin came to Pathlore through Goal Systems and Legent Corp. At Goal and Legent, he served as a CBT author, technical support representative, marketing specialist, professional services consultant, systems engineer and project manager, among other positions. Martin earned a bachelor's degree from California State University and a master's degree in philosophy from Ohio State University.

Address: Pathlore Software Corp.
7965 North High Street
Suite 300
Columbus, OH 43235
E-mail jmartin@pathlore.com
Phone (614) 781-0036
Fax (614) 781-7245

<XML>Your Course Here</XML>
The Implications of Extensible Markup Language for Course Development and Design

Martha Mealy
Training & Development
University of Wisconsin Learning Innovations

Scott Reeser
Development
University of Wisconsin Learning Innovations

XML Origins

In the late 1990s, the Standard Generalized Markup Language (SGML) Editorial Board began an effort under the auspices of the World Wide Web Consortium (W3C) to design a subset of SGML. The purpose of this subset, Extensible Markup Language (XML) was to extend the flexibility in publishing that SGML provides to information delivery on the Internet. This subset of tags is similar to those used in HTML for web authoring, but extends HTML in important ways. A key characteristic of XML's value over HTML is its industry specific nature. Experts in a given profession are enabled through XML to define their own subset of tags that can be used for communicating information across the industry as a whole in a common agreed upon standard. In education and training, content can be described and labeled much more specifically to make the searching and collating of information easier, content can be shared more easily between different types of course content and information stores and learning management systems, and content can be organized and presented differently according to the requirements of the end user, the learner.

Development of Learning Standards

The effort to author specifications leading to a common standard for training and education involved a wide variety of organizations, both public and private sectors, domestic and international (Figure 1). In the late 1990's, the European-based standards organization ARIADNE worked in parallel with United States-based Instructional Management Systems (IMS) Project to develop learning object metadata (i.e. conceptual information standards around a piece of educational content) specifications. These specifications were presented to the Learning Technology Standards Committee (LTSC) of the IEEE as a recommendation for their developing standard. Where ARIADNE focuses on "reusing computer-based pedagogical elements and telematics supported training curricula," IMS focuses on the development of a comprehensive architecture based around XML technology for online learning.

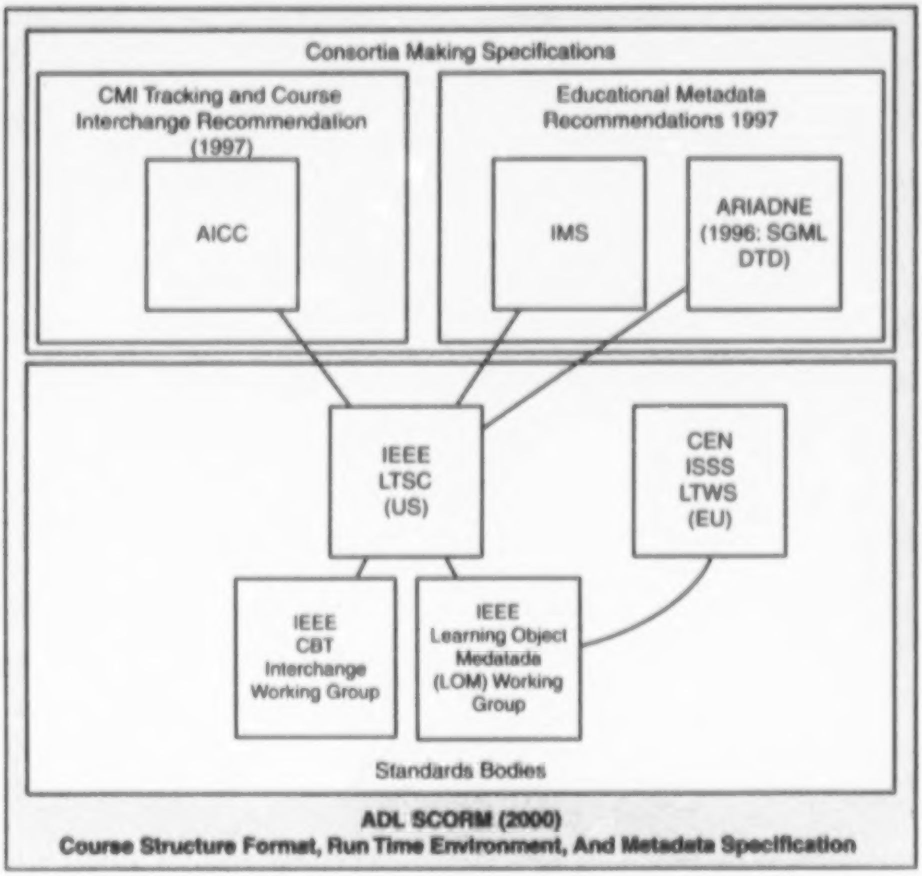

Consortia Making Specifications
CMI Tracking and Course Interchange Recommendation (1997)
AICC
Educational Metadata Recommendations 1997
IMS
ARIADNE (1996: SGML DTD)
IEEE LTSC (US)
CEN ISSS LTWS (EU)
IEEE CBT Interchange Working Group
IEEE Learning Object Medatada (LOM) Working Group
Standards Bodies
ADL SCORM (2000)
Course Structure Format, Run Time Environment, And Metadata Specification

Figure 1: Learning Standards and Specifications Relationship

The Aviation Industry CBT (Computer-Based Training) Committee (AICC) is an international association of technology-based training professionals whose focus is on the development, delivery, and evaluation of training technologies as it relates to the aviation industry. As part of the AICC's continuing goals to establish high quality training, specifications were developed around interoperability and tracking of content in a learning management system (LMS). Specifically, the AICC's CMI (Computer Managed Instruction) specification define methods of data exchange needed for communication between a student or trainee's interactions with content and a LMS. The AICC's specification also defines a means by which course structure could be exchanged between different courseware software systems. Because of their influence in the marketplace, the AICC's specification have become the de facto specification and the most broadly applied. Most, if not all, of AICC's specification are accepted by standards bodies as well as commercial vendors

BEST COPY AVAILABLE

The Department of Defense (DoD), facing a tremendous training challenge given the diverse content needs and geographic distribution of their training population, entered the specification-writing field to insure that content developed for them was "reusable, assessable, durable and interoperable." In an effort to provide a more comprehensive recommendation for training industry vendors for consistent implementation of the developing learning technologies, the DoD established the Advanced Distribution Learning (ADL) Initiative. By January 2000, the ADL Initiative released the first version of the Sharable Courseware Object Reference Model or SCROM. The SCORM, a model that takes into account major aspects of all of the above-mentioned developing specifications and standards, addresses three elements: course structure format, run time environment, and metadata. The applicability of this model will be tested at two 'PlugFest' events in the summer of 2000 at the ADL Lab in Alexandria, VA and in conjunction with the Distance Education Conference in Madison, WI.

Learning Applications of XML

What do all these specifications and standards have to do with extensible markup language (XML), one might ask. XML provides the format for 'wrapping' learning objects with the necessary learner management metadata described in the specifications outlined here. Learning objects, as defined by Wayne Hodgins, are small, coherent units of learning that can be easily shared across courses and potentially organized on demand into a personalized curriculum. The use of XML and a learning object approach in course material and curriculum design allows course materials to be collected in large repositories and to be assembled dynamically according to several factors to provide the most appropriate learning options for the learner. These factors could include aspects of the learner's profile, such as preferred learning style, existing expertise, and learning goals, the objectives established for the curriculum, as well as the means of delivery device or platform for the learner (Figure 2).

Accommodating varying student learning styles (or intelligences) is a particularly interesting feature that XML-based metadata can provide. Instructors have long sought to represent a given concept in a variety of learning formats so as to provide the possibility of a holistic learning experience for a broader base of learning styles found in their students. Unfortunately, an instructor may have been limited by his/her ability and resources to develop, locate, and manage such a complex and numerous array of course materials. Using XML-based metadata and a reusable learning object (RLO) format, instructors and instructional designers now have the ability to adapt existing course materials and share them with other content providers by wrapping these RLOs with descriptive information such as the objectives the object addresses, the type of learning style implemented in the object's design, copyright and ownership information, and where the object can be found

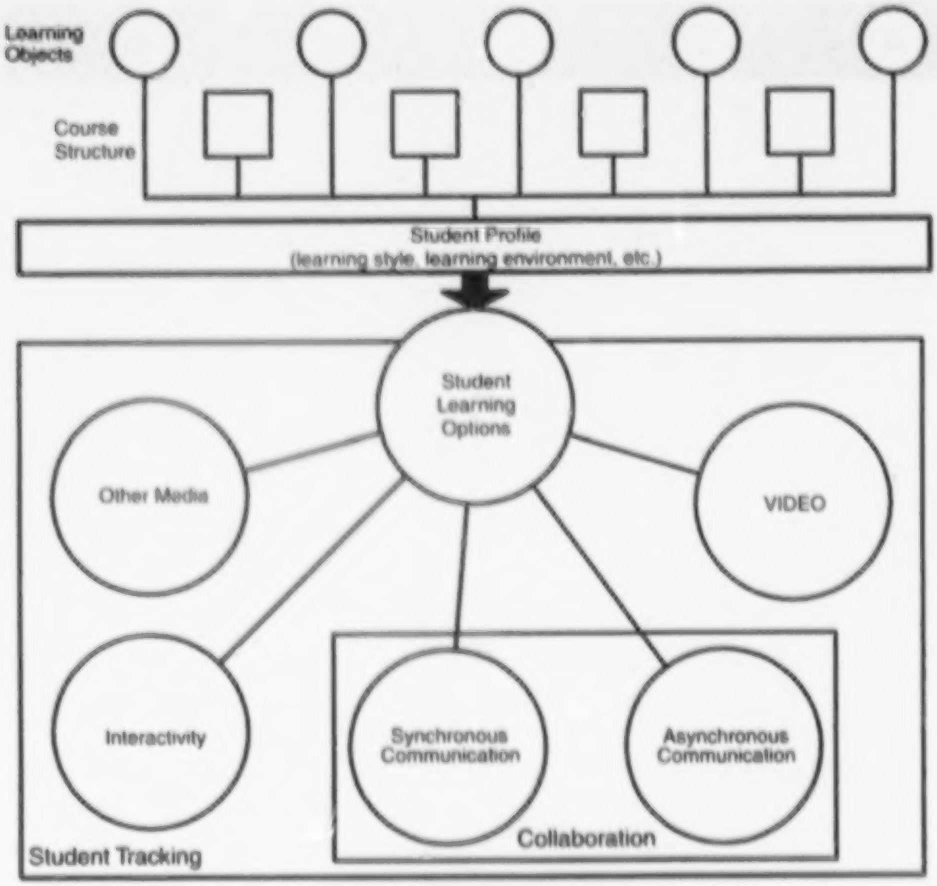


Figure 2: Personalized Student Centered Learning

Implications for Design

This dynamic, learner-centered course construction and delivery strategy presents several challenges in instructional design. As learning objects are defined, the discreetness of an object comes immediately into question. Design methods to develop self-contained learning objects still need to be determined. In addition, the means to evaluate the quality of the surrounding metadata of a learning object need to go beyond conformance to a specified categorizing scheme. A formal review process needs to be establishing to insure the accuracy of metadata related to instructional level and academic quality.

If potentially one course could be completely personalized for each learner enrolled within the course, the quality of data will play a role in the intelligent decisions of the selection and assembly of RLO into a coherent course. Currently, it is the instructors and instructional designers who recognize the need for and provide a broader context across a course. This context sustains

BEST COPY AVAILABLE

learners' interest and motivation for learning by providing the pattern where threads of data and experience become a coherent fabric of information. Careful thought must be given to anticipating how these objects might come together depending on the needs of the learner and the course objectives. Related to this need for a context is the appropriate integration of collaboration in the from of cohort discussion and project work. Incorporating collaboration poses an interesting challenge in the RLO and dynamic course design strategy. Therefore, just as efforts are underway to develop quality metadata around RLO's, instructional designers and content developers need to play a role in the capturing and distilling of the necessary intelligence by which learning management systems might begin to make decisions in creating dynamic and personalized courses. The metadata will also become partially responsible for making sure that the individualized experiences are equivalent and that each student being appropriately prepared to demonstrate competency. Extensive testing and evaluation of the effectiveness of such dynamic content assembled using the RLO metadata and learner profile information will be critical to the refinement of a specification such as the ADL's SCORM.

Obviously there are many questions to be considered as we, as a learning community, work to evaluate and refine development specifications around learning. As instructional designers and content developers moving into revised roles within the new learning paradigm, we should begin to consider questions such as these:

1. How will the quality of the metadata surrounding the content be assured?
2. What decisions/logic/intelligence goes into the creation of a high quality personalized course? How will a LMS accomplish this?
3. What roles do instructional designers and instructors have in the ongoing definition, development, and application of these metadata specifications in the new learning paradigm?

References

AICC FAQ, AICC, *http://www.aicc.org*

ARIADNE Project *http://ariadne.unil.ch/*

Bosak, J. XML, Java, and the future of the Web. Sun Microsystems, *http://metalab.unc.edu/pub/sun-info/standards/xml/why/xmlapps.htm*

Dodds, P. (Ed.). (2000, January). *Sharable Courseware Object Reference Model, SCROM*, Advanced Distributed Learning Initiative.

Hodgkins, W. (1999, October). *Learning Architecture, API, and Learning Objects*. Online Learning.

Hodgkins, W. (2000, February). *Into the Future, a Vision Paper*. The Commission on Technology and Adult Learning, ASTD and NGA.

Biographical Sketches

Martha Mealy is currently coordinating research and development in emerging technologies and learning strategies for UW Learning Innovations. After teaching math and science for five years at the secondary school level, she received a Masters of Education from the Harvard Graduate School of Education in 1989. Before joining UWLI, she worked as an Instructional Specialist at the UW-Madison School of Veterinary Medicine where she developed computer based teaching modules and assisting in coordinating a continuing education program for practicing veterinarians. In her current position with UWLI, she has led instructional design training for corporate trainers and university faculty in the area of Internet-based education.

Address: UW Learning Innovations
505 S. Rosa Rd.
Madison, WI 53713
E-mail: mealy@learn.uwsa.edu

Scott Reeser is currently an instructional designer and programmer for UW Learning Innovations (UWLI). Originally from central Illinois, he graduated from Goshen College, Goshen, IN with a degree in Physics and an interest in education. He acquired his M.S. in Training and Development from Illinois State University with an emphasis in Web-based instruction. Upon graduating he ventured to Madison, Wisconsin and joined UWLI as a courseware developer. He continues to work on a variety of projects including academic course development as well as designing and developing corporate strategies for enabling Web-based course deployment.

Address: UW Learning Innovations
505 S. Rosa Rd.
Madison, WI 53713
E-mail: reeser@learn.uwsa.edu
Phone: (608) 262-8204

Building Online Learning Communities in a Graduate Program in Adult Education

Henry S. Merrill, Ed. D.
Visiting Associate Professor of Adult Education
Indiana University, School of Continuing Studies

This paper is the first step in a process of examining the literature on creating online learning communities, presenting some information based on the results of research and student course evaluations, and articulating some course design strategies used in my online courses. The primary focus of the Adult Education program at Indiana University is the professional practice of adult education for those with education or training responsibilities in the private (a training or HR unit) or in the non-profit sector. We also have students who are faculty in community or vocational college settings, and a few making career transitions and want to enter the training or consulting field. The next step in developing these ideas is through dialogue at the 16th Annual Conference on Distance Teaching and Learning to stimulate further reflection and improvement.

The Importance of Online Learning Communities

A number of models of distance learning have included elements such as climate and communication (Verduin & Clark, 1991), social integration and academic integration (Kember, 1995), or the four psychological needs identified in Glasser's Control Theory: belonging, freedom, power and fun (Schweizer, 1999). These are also consonant with recognized practices for effective learning and teaching in a face-to-face classroom and as important elements for facilitating adult learning. Knowles described the andragogical design process for adult learning with six core learning principles. These principles recognize the importance of: 1) Learner's need to know; 2) Self-concept of the learner; 3) Prior experience of the learner; 4) Readiness to learn; 5) Orientation to learning; and 6) Motivation to learn (Knowles, Holton and Swanson, 1998, p. 182).

A comprehensive framework for building online learning communities is presented by Palloff and Pratt. This framework includes the following major program elements: access to technology; guidelines and procedures; participation; collaborative learning; transformative learning; and evaluation of the process (Palloff and Pratt, 1999, p. 18). Within this framework, which they claim defines a new paradigm for an electronic seminar or course, they state: "The keys to the creation of a learning community and successful facilitation online are simple. They are as follows: honesty, responsiveness, relevance, respect, openness, and empowerment" (Palloff and Pratt, 1999, p. 20).

A useful description of communication for our purpose in discussing online learning communities is presented by Verduin and Clark: "Communication is a process of sharing ideas, needs, and perceptions and can be used to build considerable unity and rapport between educational staff members, adult clients and the institution. It is, by definition, the giving and receiving of meaning and, at the concrete level it is actually the mutual exchange of ideas, needs, perceptions, opinions, facts, and other items of interest. To be effective, communication should flow multidirectionally (to all people concerned) and should be two-way in nature. This will ensure that people are informed and also that they may react to the information accordingly (Verduin and Clark, 1991, p. 179).

Information From a Research Project and Student Course Evaluations

The starting point for this presentation is research conducted using the first online course I developed in the Fall of 1998. The course is ACE D505, The Adult as Client of Education I: "The focus of this course is the study of contemporary adult life with emphasis on the individual in the context of the field of professional practice of adult education. We will investigate and critically analyze the theories and research methods used to understand adult development as part of the foundation for designing learning experiences for comprehensive adult education programs" (D505 1998 Course Syllabus).

The context for this research on D505 may be summarized as follows: a graduate-level computer-mediated course taught in the Fall of 1998. The class consisted of 34 students (which is too large for an online course), 23 female and 11 male, ranging in ages from 27-52. Most were taking the course as part of the requirements for obtaining a master's degree in Adult Education. About one-fifth of the course participants were new to the technology used in the course, and another fifth were extremely technology competent (i.e., were using the Internet as an everyday part of their work and personal life), with the remaining students having limited computer literacy and web browsing experience. There was an initial meeting and a closing meeting in which students communicated using a video-based conferencing system on three IU campuses. Aside from these video-based meetings, all formal course contact took place using the asynchronous and, less frequently, synchronous conferencing tools created in Pearle.

This summary of the research process for D505 is adapted from the abstract of this as yet unpublished paper:

> The research on the 1998 course describes an on-line course in which graduate students collaboratively investigated and shared their personal experiences with respect to adult development. For this study, naturalistic inquiry and grounded theory development was used to gain a holistic view of this semester-long course, and to identify the specific emergent issues that characterized course dynamics. Four emergent issues were identified through the data analysis process—open, axial, and selective coding. The goal is to use samples of the data to illuminate and contextualize the particular issues that were identified. For the research, a subset of examples (archived class postings) was used to contextualize the identified issue. Each of the emergent issues was associated with a minimum of 75 class postings that were derived from over 500 researcher-coded student postings. These data are presented as examples to illuminate four emergent issues: (1) flexibility of course to accommodate participants with varying backgrounds and interests; (2) co-construction of meaning through the sharing of personal experiences; (3) the expression of vulnerability and personal growth by participants; and (4) the emergence of a positive, caring, non-threatening environment. As a result, we concluded that this course

> provided evidence that on-line courses can involve deep learning about content, open sharing about personal experiences, and can promote a sense of community. Students readily shared their feelings, critically examined course issues, extended their support in helping peers, and embraced many of the challenges of taking an on-line course. Implications drawn from this research are that benefits of on-line courses extend beyond the time and place independence it provides for participants, but also includes the reflective and social environment it can foster. (Barab, Merrill, & Thomas, 1999, p.1)

On-line learning in D505 used the virtual space of the web environment to create a climate that supported learners through acceptance of and respect for the life experiences and social structures they bring to the course. The learning activities were varied and flexible to involve the individual in describing their learning needs and defining objectives for their learning plan for the semester. As facilitator, setting the climate of an on-line course is crucial, especially in the conceptual framework of the learning activities and the tone of communications from the beginning. The largely asynchronous delivery mode of my courses provide freedom and flexibility in dealing with the constraints of resources such as time, space, money, personal and family relationships.

Freedom and flexibility is provided by the fact that in two core courses students develop individual learning contracts for segments of the course, select the theorists or program design models they would research, and in the diversity of group projects they may select. Another aspect of the course designs that contribute to course flexibility is that fact that much of class work took place in a virtual space accessed and participated in from multiple spatial and temporal spaces, thus, meeting the needs of the class participants. Although many of the students viewed this as a strength of the course, for others this dynamic nature of the course was somewhat overwhelming. This tension between being flexible yet also providing structure is a necessary tension in adult learning environments, and especially present when situating all course activity in virtual space. However, the use of virtual spaces to meet and conduct business is increasingly becoming a part of everyday activity, and must become a part of university learning activity.

A second emergent issue in this course involved the co-creation of meanings as participants contextualized the course content in their personal activities. Having these on-line collaborative spaces served two purposes, contextualizing course activity in personal experiences and supporting the sharing of multiple perspectives. This is important when one accepts that meaning of a concept or theory is not an objective property but is instead a situationally determined phenomenon, whose particular attributes are contextually dependent (Barab, Cherkes-Julkowski, et al., in press; Bereiter, 1994). The development of an appreciation for the multiple applications of a particular theory of adult development, and the ability to share and reflect with others that have had rich life experiences becomes essential and was a major asset of this course. This was evident in this student comment, "While the book helped bring out information, I have found that my peers have been my most valuable resource in the class. The threaded discussions of their real life cycles and situations have truly given me appreciation for Hudson's and other theorists hypotheses." (Barab, et al, 1999)

The last issue characterizing course activity was the emergence of a positive, caring, non-threatening environment. The data suggests that course participants did indeed share personal material, did support each other in addressing individual needs, and did encourage the evolution of thinking about course issues in a personal way. For example, a student who before leaving for a conference asked if he could gather resources for other class participants. Or other students who posted their willingness to meet with class members face-to-face to assist them in working through technological challenges. In addition to the sharing of previous experiences as they related to course activity, students also shared experiences that unfolded during and as part of the course activity. For example, the shared challenge of taking an on-line course, learning and embracing change, or the birth of a baby, whose parents were both enrolled in the class. Although not having all the characteristics associated with full communities, clearly a sense of communal spirit did indeed emerge for class participants.

Information From Student Evaluations

In the Spring Semester 2000, adult education faculty adapted an online student evaluation process for use in our courses. The instrument and process had been developed and refined for use with a research project looking at online professional development courses during 1996-1999. The students complete the instrument online and the results are automatically submitted to an evaluation specialist independent of the program to compile the results and provide a summary report and transcript of all narrative comments to the course facilitator. The following information and observations are based on the course evaluations for D506, The Adult as Client of Education II.

The course for which student evaluation material is presented is D506, The Adult as Client of Education II. There were 23 students enrolled. The course description and my objectives for Spring Semester, 2000 were:

This course is designed to help course participants learn the adult education, HRD and training program planning process, including needs assessment, program development, and promotion for organizations and groups, either in the public or private sector.
Facilitator's Objectives:

1. To facilitate a graduate level learning experience focusing on program design and practice in a variety of adult education settings, including: (a) Understanding program design models; (b) Identifying program design applications in various settings; (c) Making appropriate use of program design in developing educational programs for adults;
2. To develop expertise with elements of distance learning technologies (web-browsers, email, discussion forums and chat rooms) in the learning experience;
3. To further participants' development of self-directed learning skills and use of distance learning technologies as members of an interactive on-line learning community (excerpt from D506 Syllabus Spring 2000).

The information drawn from the online student evaluations underscores their positive response to the flexibility of completing a course online with some underlying yearning for more in-person interaction with classmates and the facilitator. A total of 18 (23 were enrolled) students completed the online evaluation. A sampling of relevant attitudinal inquiries reported by the evaluator receiving a higher number of Strongly Agree or Agree responses, emphasizing existing strengths included: 1) The learning environment was conducive to independent thinking. 2) The instructor provided opportunities for activities requiring group participation. 3) Course materials and instructional activities were well planned and organized. 4) The pace of instruction was appropriate and matched learning needs.

A sampling of attitudinal inquiries receiving a lower number of Strongly Agree or Agree responses, suggesting opportunities for improvement included: 1) Assignments/projects/tests were promptly assessed and returned. 2) Instructor feedback on assignments/projects/tests was helpful to me. 3) The course's online conferencing tool was "user friendly."

Positive narrative comments included a focus on the convenience and flexibility of web delivery, the variety of interactive experiences with the instructor and other students, and easy reference to previous materials and access to other students' thoughts and materials. The negative narrative comments included lack of in-person interaction, no opportunity for face-to-face dialogue, and difficulty of establishing personal relationships, personal networking. It is interesting to note the responses to this prompt: "My first two media preferences for continuing education course delivery are": 1) Of the 18 responses, 16 identified online or email as the first choice, one identified formal class meetings and another specified videoconferencing. 2) The second choice for five was class meetings, and one suggested tapes (presumably videotapes), while the remaining 11 either did not specify a second choice (2) or suggested a combination such as email, audio, CD-ROM or correspondence.

Effective Approaches to Course Design for Online Adult Learning

Malcolm Knowles described a conceptual framework for facilitating adult learning thirty years ago with the exposition of his worldview perspective he labeled andragogy. In contrast to pedagogy, the teaching of children used in K-12 education, andragogy is based on the relationship between learner and facilitator in which it is the facilitator's responsibility "to provide a caring, accepting, respecting, helping social atmosphere" (Knowles, 1984, p. 17). Knowles described his refined andragogical design process for adult learning with six core learning principles: 1) Learner's need to know; 2) Self-concept of the learner; 3) Prior experience of the learner; 4) Readiness to learn; 5) Orientation to learning; and 6) Motivation to learn (Knowles, Holton and Swanson, 1998, p. 182). It is important to note that Knowles further described these principles as "a system of elements that can be adopted in whole or in part. It is not an ideology that must be applied totally or without modification. In fact, an essential feature of andragogy is flexibility" (Knowles, 1998, p. 183). Not all adult educators accept the distinction between pedagogy and andragogy, but many agree with Knowles' emphasis on the freedom of the adult learner to become a more self-directed learner and autonomous individual, and the power of human agency to overcome social structures and individual circumstances in pursuit of learning to effect life change.

Advocates of the Constructivist approach to facilitating learning share similar views. These eight constructivist principles are suggested by Savery and Duffy (1996): 1) Anchor all learning activities to a larger task or problem; 2) Support the learner in developing ownership for the overall problem or task; 3) Design an authentic task; 4) Design the task and learning environment to reflect the complexity of the environment in which learners should be able to function at the end of the learning; 5) Give the learner ownership of the process used to develop a situation; 6) Design the learning environment to support and challenge the learner's thinking; 7) Encourage testing ideas against alternative views and alternative contexts; 8) Provide opportunity for and support reflection on both the content learned and the learning process. Knowles,, Holton and Swanson note that "the parallels between moderate views of constructivism and andragogy are striking. Both stress ownership of the learning process by learners, experiential learning and problem-solving approaches to learning" (1998, p. 143).

The following list of characteristics gleaned from the models discussed earlier, the research, adult and constructivist learning principles is offered as a starting point for dialogue about developing online learning communities.

- Facilitator demonstrates honesty and authenticity in interactions with learners.
- Facilitator shows commitment to responsiveness to all learner communications.
- Facilitator shows respect for the diversity and uniqueness of the culture, values and attitudes of each learner.
- Facilitator empowers learners to become increasingly self-directed and self-actualizing.
- Facilitator demonstrates mastery of course content and instructional design processes.
- Course design and activities include relevant content as the context for learning and design of authentic tasks.
- Course design and activities include collaborative learning tasks.
- Course design and activities are flexible to accommodates different ways of learning and incorporates material to engage multiple intelligences.
- Course design and activities facilitate the learner's building of understanding and meaning on prior experience and understanding.

References

Barab, S. A., Merrill, H. S., & Thomas, M. K. (1999). Online learning: From information dissemination to building a shared sense of community. Unpublished paper.

Kember, D. (1995). *Open learning courses for adults: A model of student progress.* Edgewood Cliffs, NJ: Educational Technology Publications.

Knowles, M. S. (1984). Introduction: The art and science of helping adults learn. In M. S.Knowles & Associates (Eds.*), Andragogy in action: Applying modern principles of adult learning* (pp. 1-21). San Francisco: Jossey-Bass.

Knowles, M. S., Holton, & E. F., Swanson, R. A. *The Adult Learner.* Houston, TX: Gulf.

Palloff, R. M., & Pratt, K. (1999). *Building learning communities in cyberspace.* San Francisco: Jossey-Bass.

Schweizer, H. (1999). *Designing and teaching an on-line course.* Boston: Allyn & Bacon.

Verduin, J. R., & Clark, T. A. (1991). *Distance education, The foundations of effective practice.* San Francisco: Jossey-Bass.

Biographical Sketch

Dr. Henry Merrill is Visiting Associate Professor and Chairman of the Department of Adult Education in the Indiana University School of Continuing Studies. During his 30 years in higher education he has taught theater and served in professional positions in student affairs and continuing education.

Address: IUPUI
620 Union Drive, Room 507
Indianapolis, IN 46202-5171
E-mail: hmerrill@iupui.edu
URL: www.indiana.edu/~scs/
Phone: (317) 278-0546
Fax: (317) 278- 2280

Use of a Social-Behavioral Model in the Development of a Distance Course for Adults With Vision Loss

Susan D. Moisey, Ph.D., Associate Professor
Centre for Distance Education
Athabasca University

Introduction

Over the past several decades, there has been remarkable growth and proliferation of self-help groups, also known as mutual-aid or peer support groups. Modern forms of self-help groups were heralded by the founding of Alcoholics Anonymous in 1935, followed soon after, in 1937, by that of the Association of Nervous and Former Mental Patients, now known as Recovery. Today it is estimated that as many as 15 million people in North America belong to more than 500,000 self-help groups.

Participation in self-help groups has been associated with improved health and well-being among persons with chronic illness or disability as well as other problematic conditions. For example, Van Zandt et al. (1994), in a study of seniors with vision loss, found that those who participated in support groups were more successful in coping with their visual loss, had increased satisfaction with their level of activities, and generally had a more positive outlook on life in comparison with those who did not attend such groups. These findings support earlier work in other areas. For example, Telch and Telch (1986) found consistently superior coping skills in cancer patients who attended support groups; Maida (1985) reported similar findings with cardiac patients and those undergoing dialysis therapy, and later in a study involving patients with lupus disease (Maida et al., 1992).

Weiss (1989) provides an excellent discussion of self-help groups for the visually impaired, citing benefits such as learning how to deal with problems and needs, developing coping strategies, acquiring a feeling of empowerment or control over one's life, combating isolation and alienation, developing networks, using time productively, and getting to know others. She concludes by stating, "Individuals with vision loss have embraced the concept of self-help as a valuable exchange of practical information and emotional support" (p. 97).

Recognizing these benefits, the Hadley School for the Blind commissioned the development of a distance-delivered course to encourage individuals with vision loss to participate in self-help group activities. The resulting course, *Self-Help Groups: A Personal Introduction*, was presented in four modules, each comprising a 60-minute audio-tape, and supported by the involvement of a facilitator available by telephone. The course was based on an instructional model that integrated behavioral strategies and social learning theory, as well as the application of the Transtheoretical Model of Change (Prochaska, Norcross & DiClemente, 1994). The model, which addresses behavioral, cognitive, and attitudinal precursors that promote the involvement of students in self-help groups, is described below.

Theoretical Foundation and Application of the Model

The Social-Behavioral Model described in this paper involves the integration of three theoretical frameworks: instructional systems design; social learning theory, and the stages of change framework provided in the Transtheoretical Model of change. These foundations are described below, with a brief discussion of how this aspect of the model was applied in to the course Self-Help Groups: A Personal Introduction.

Instructional Systems Design

Conventional instructional design, particularly Dick and Carey's (1990) model, formed the basis of the Social-Behavioral Model. Namely, the following steps were involved: (1) identification of instructional goals; (2) instructional analysis, (3) identification of entry behaviors and learner characteristics, (4) development of performance objectives and test items, (5) determination of an instructional strategy, (6) development of materials; (7) formative evaluation (pilot testing); (8) revision; and (9) summative evaluation. These steps were clustered into three phases: analysis (Steps 1-3); design and development (Steps 4-6); and evaluation and revision (Steps 7-9). Application of this framework provided an efficient and effective means of designing instruction to ensure that students obtained the knowledge and skills they required.

Social Learning Theory

Social learning theory (e.g., Bandura, 1977a) addresses how social and personal competencies can evolve out of the social conditions within which learning occurs. Aspects of this theoretical foundation, particularly the concept of self-efficacy, was integrated into the Social-Behavioral Model applied in the development of the course.

Self-efficacy (Bandura, 1977b) pertains to the learner's conviction that they can successfully execute a behavior, and involves a prediction of how effective or competent their behavior will be. Efficacy expectations affect the extent to which a learner will use the newly acquired behavior in difficult situations, the amount of effort that will be expended, and how long the behavior will persist in the face of obstacles and frustrations. Efficacy expectations can be influenced in a variety of ways.

The Social-Behavioral Model made use of two primary strategies for inducing self-efficacy: verbal persuasion, and vicarious experience through the use of live and symbolic modeling. For example, the course content emphasized the advantages of involvement in self-help groups and included personal testimonials in the form of examples. Activities were also included where students engaged in a discussion group (quasi-self-help group) with their instructor and (if they desired) with other students in the course. Assignments involved listened to a tape-recording of a group in action, observing actual self-help groups, and being a participant in a self-help group if they were able and comfortable doing so.

Stages of Change Framework

The Transtheoretical Model of Change (Prochaska, Norcross, & DiClemente, 1994) addresses how people change health-related behaviors. It has been applied to numerous areas, such as alcohol and drug abuse, smoking, eating and exercise habits, HIV/AIDS prevention, and weight loss. The model describes six stages of change. Each stage has optimal processes most likely to promote change. The model perceives change along a continuum, where individuals move through predictable stages throughout the change process. Each stage has specific tasks, which must be completed before moving on to the next stage. The stages are described below.

1. *Pre-contemplation* - People in pre-contemplation usually have no intention of changing their behavior, and typically deny they have a problem. The main task of this stage is for the individual to become aware of their behavior (or lack thereof). The most effective strategy is to increase the individual's perception of the risks and problems with the current behavioral state.
2. *Contemplation* – In this stage, people acknowledge they have a problem and are seriously thinking about solving it. They have not yet made a commitment to take action to change their behavior. Contemplators struggle to understand their problem, to see its causes, and to evaluate possible solutions. The main task of this stage is for the individual to gain information and understanding of their behavior, and to weigh the pros and cons of the problem and its solution. The most effective strategy is to "tip the decisional balance" (the pros and cons) in favor of change.
3. *Preparation* – People in the preparation stage are planning to take action. The individual may be committed to action, but still feel ambivalent about making a change. This ambivalence must be resolved. The main task of this stage is to develop a plan for change. The most effective strategy is to help the individual develop a plan that is acceptable, appropriate, and effective.
4. *Action* – The action stage is where people actually change their behavior. They engage in activities or change their environment in order to alter their problem behavior. Many people, erroneously, equate action with change. It is only stage, and change will not occur (or last) unless the other stages are completed as well. The main task of the action stage is demonstrating behavior. The most effective strategy is to provide encouragement and support to enhance the individual's sense of self-efficacy.
5. *Maintenance* – During the maintenance stage, the gains attained during the action and other previous stages are consolidated. The individual typically struggles to prevent lapses and relapses. Although maintenance is sometimes viewed as a static stage, it is a critical continuation, not an absence, of change. The main task is to stabilize the behavior and avoid relapse. The most effective strategy is to help the individual maintain the change in behavior.
6. *Termination* – The termination stage is the ultimate goal for people involved in change. It is defined by the following criteria: the problem behavior no longer presents any temptation or threat; the behavior does not return; and the individual has confidence in coping without fear of relapse. Not all people reach this stage. Many individuals remain in maintenance for a lifetime, where they build a new lifestyle, but may occasionally be tempted to revert to their former problem behavior.

The Social-Behavioral Model integrated aspects of the Stages of Change framework. For example, involvement in self-help activities (the goal of the course) was perceived on a continuum, ranging from considering attending a group to actual attendance to involvement in leadership activities. The course was designed to move students along this continuum of involvement.

Students were presented with content and progressively more challenging experiences to foster participation and greater involvement in self-help activities. To illustrate, the persuasive discussion of the benefits of self-help groups was included primarily for the use of students in the contemplation stage of change process. For those in the preparation stage, content was presented about what to expect and how to conduct yourself in a group, and activities were included to help them develop a plan, e.g., locate a group and find out where and when it meets. Activities were presented for those in the action stage to enhance their involvement, for example, to assume leadership activities.

Conclusion

The Social-Behavioral Model described in this paper involves cognitive, social, and behavioral aspects of learning. Although the model was applied in this situation to the design of a distance course for students with vision loss to promote their involvement in self-help group activities, its application is much broader in scope. It is particularly useful in instructional situations where behavior change must be integrated into the student's lifestyle.

References

Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavior change. *Psychology Review*, *84*, 191-215.

Dick, W., & Carey, L. (1990). *The systematic design of instruction* (3rd ed.). Glenview IL: HarperCollins Publishers.

Maida, C. (1985). Social support and learning in preventive health care. *Social Science Medicine*, *21*, 335-339.

Maida, C., Katz, A., Strauss, G., & Kwa, C. (1992). Self-help, social networks and social adaptation in Lupus. In A.H. Katz et al. (eds.) *Self-help: Concepts and Applications* (pp. 166-185). Philadelphia, PA: Charles Press.

Telch, C. & Telch, M. (1986). Group coping skills, instruction and supportive group therapy for cancer patients: A comparison of strategies. *Journal of Consulting and Clinical Psychology*, *54*, 802-808.

Prochaska, J., Norcross, L., & DeClemente, C. (1994). *Changing for good*. New York: Morrow.

Van Zandt, P., Van Zandt, S., & Wang, A. (1994, May-June). The role of support groups in adjusting to visual impairment in old age. *Journal of Visual Impairment and Blindness*, pp. 244-252.

Biographical Sketch

Susan Moisey is an associate professor with the Master of Distance Education at Athabasca University where she teaches systems design and curriculum development. She was formerly the President of Integrated Learning Systems, a consulting firm involved in instructional systems design and development in the public, private, and not-for-profit sectors.

Address: Athabasca University
1 University Drive
Athabasca, Alberta T9S 3A3
E-mail: susanh@athabascau.ca
Phone: (780) 675-6501
Fax: (780) 675-6170

Selecting Pedagogical Methods Based on Learning Requirements

Michael Molenda, Associate Professor
Indiana University

Research in instructional theory tells us that different methods have differential value for reaching different educational goals and objectives. Drawing particularly on the work of Reigeluth and his colleagues (Reigeluth, 1999), we have developed a planning matrix to simplify the task of planning instruction for distance education. It involves identifying the learning requirements of different lessons--e.g., concept acquisition, procedural skill development, generic thinking skills, affective learning, interpersonal skills, and so on; then deciding on instructional methods aligned with those requirements--including lecture/presentation, demonstration, laboratory, discussion, and so on; and selecting specific online delivery tools to implement those methods.

Learning Requirements

Instructional designers typically approach the selection of methods and media by first deciding what types of learning need to be mastered by the learners. One familiar taxonomy of types of learning is Bloom's (1956), which divides objectives into the cognitive, affective, and psychomotor domains. Later developments in instructional research and theory have led to other taxonomies, including those of Merrill and Reigeluth, which are more strongly influenced by cognitivism (Reigeluth & Moore, 1999). The categories of learning used in this paper are a hybrid, incorporating ideas from Merrill, Reigeluth, Romiszowski (1999), Romiszowski (1981), and Kemp et al. (1998).

Having decided on which types of learning need to be emphasized in a given lesson or module, the next step is to find instructional strategies and tactics that will enable learners to masters those learning goals most efficiently and effectively. Guidelines for this are found in Reigeluth (1990) and Kemp et al. (1998).

Instructional Methods

As much diversity of opinion as there is on how to categorize learning types and types of instructional strategies, there is even more divergence on how to define "instructional methods." For the purposes of this paper the classification scheme developed by Molenda (cited in Reigeluth 1999, p. 23) is used.

Online Delivery Methods

When applying this process to the design of distance education delivered primarily online, that is, through computer-based media, the final step in this process is to select a specific online tool that is suited for delivery of the desired instructional method. All of these considerations are summarized in Table 1.

Table 1. *Matrix for Selecting Online Delivery Methods Based on Learning Requirements*

Learning Requirement	Instructional Strategy/Tactics	Instructional Method (simplest possible)	Online Delivery Method
Fact	-rehearsal -mnemonic storage	lecture/presentation, independent study	Web text pages, Web slide presentation
Concept Classification	-show examples -list critical attributes	tutorial	Web text pages, online tutorial
Understanding (ideas)	-show relationships	lecture/presentation, independent study	Web slide presentation, Web text pages, inter-student conferencing
Understanding (causal)	-build mental model through elaboration process	laboratory	Website with database
Principle (recall)	-rule/example	lecture/presentation, independent study	Web text pages, online tutorial
Principle (apply)	-rule/example plus elaboration	tutorial	online tutorial, inter-student conferencing
Procedural skill (recall)	-demo/modeling -rehearsal, mnemonics	demonstration, lecture/presentation	multimedia CD-ROM
Procedural skill (apply)	-practice & feedback	drill & practice, laboratory	multimedia tutorial
Generic thinking skill	-simple-to-complex sequencing, elaboration	tutorial, laboratory	online tutorial, Website with database
Interpersonal skill	-provide a model -practice & feedback	demonstration, simulation	videoconferencing, inter-student conferencing
Attitude	-provide a model -practice & feedback	demonstration, simulation	videoconferencing, inter-student conferencing
Motor skill	-demo/modeling -practice & feedback	demonstration, simulation, laboratory	streaming video, videoconferencing

References

Bloom, B. S. (1956). *Taxonomy of educational objectives. Handbook I: Cognitive domain*. New York: David McKay.

Kemp, J. E., Morrison, G. R., & Ross, S. M. (1998). *Designing effective instruction* (2nd ed). Columbus, OH: Merrill.

Reigeluth, C. R. (1990). Instructional Strategies and Tactics. In Husen & Postlethwaite (Eds.), *International encyclopedia of education. Supplementary volume two*. Oxford, UK: Pergamon.

Reigeluth, C. R. (1999). *Instructional-design theories and models*. Rahwah, NJ: Lawrence Erlbaum.

Reigeluth, C. R., & Moore, J. (1999). Cognitive education and the cognitive domain. In Reigeluth (Ed.), *Instructional-design theories and models* (p. 54). Rahwah, NJ: Lawrence Erlbaum.

Romiszowski, A. J. (1981). *Designing instructional systems*. London: Kogan Page, pp. 216-224.

Romiszowski, A. J. (1999). The development of physical skills: Instruction in the psychomotor domain. In Reigeluth (Ed.), *Instructional-design theories and models*. Rahwah, NJ: Lawrence Erlbaum.

Biographical Sketch

Michael Molenda is an associate professor in the department of Instructional Systems Technology at Indiana University since 1972. He is coauthor of *Instructional Media and Technologies for Learning* (6th ed., 1999). He teaches graduate courses on instructional technology foundations and distance education.

Address: Education 2234
Indiana University
Bloomington IN 47405
E-mail: molenda@indiana.edu

Satisfying the Stakeholders: Planning With Multiple Constituencies

Michael Molenda, Associate Professor
Indiana University

Ji-Yeon Lee, Doctoral Student
Indiana University

Jeong-Eun Oh, Doctoral Student
Indiana University

Introduction

In dual-mode institutions—those that conduct DE activities in addition to conventional on-campus programs—the decision to undertake DE activities in a new department or program area can be jarring. Typically, new infrastructure must be built and new ways of operating must be learned. Such changes engender stresses on all the people involved in the new undertaking, triggering all the sorts of reactions that occur in organizations undergoing change. Planners are well advised to anticipate these reactions in order to capitalize on the ardor of the supporters and avoid the castigation of the resisters. As one guru of change management put it, "When you introduce a major change into an organization, you will pay. Either you'll pay in preparation or you'll pay in healing. But you will pay! (Dormant, 1986)"

The first step in preparing for change is to identify the constituencies who are affected by and are most likely to have influence on the success or failure of the endeavor; we refer to them as stakeholders. The next step is to calculate each person or group's likely reaction to the proposed change. In general, all people feel some disorientation and upset when faced with a significant change. This is often exhibited as some form of resistance (Duck, 1993). The larger the change, the larger the resistance. But people can become supporters, mainly by becoming participants in creating the new thing. So, the second focus of this presentation is on identifying the concerns and interests of the major constituencies regarding distance education in order to determine commonalities or conflicts of interests.

Subsequent steps include involving the stakeholders in decisions that affect them and giving them the power to carry out the actions they need to carry out in order to help accomplish the group's vision for the future (Kotter, 1995). But these change strategies go beyond the scope of this paper, which focuses on the first two steps: who are the stakeholders in distance education programs, and what concerns and interests do they have about new initiatives?

Context and Methods of Our Research

This paper is based largely on review and synthesis of relevant literature, both printed and Web-based. We also conducted a qualitative study to identify critical constituencies in distance education programs and to explore different concerns and interests of each constituency. Three departments offering or planning to offer distance degree programs in a large Midwestern university were selected, and 23 participants representing four constituent groups--administrators, faculty, students, and support staff--participated in this study. In-person and phone interviews were the primary data collection methods, and additional data were collected through online survey and document analysis.

Key Stakeholders

Even though there are slightly different perspectives among authorities in defining constituencies, most of them agree with Willis (1992) that administrators, faculty/instructors, students, and on-site facilitators/proctors are the key constituencies in DE programs (Middleton, 1997; Schlosser & Anderson, 1994). However, since this category was developed before the World Wide Web became the prevalent delivery system, we suggest reexamining this lineup. While the notion of on-site facilitators or proctors is not appropriate in most Web-based environments, library and technical support staffs have become more critical but have been overlooked in the literature (Keast, 1997). Thus we suggest the following categories of critical constituencies in DE: administrators, faculty, students, and support staff.

Further, closer examination reveals that each of these categories contains subsets, roles that often differ significantly in terms of their concerns and interests:

Faculty
- participating in DE
- non-participating

Students
- participating in DE
- non-participating

Administrators
- academic affairs, including deans and department chairs
- business affairs, including associate deans and business managers
- both academic and business concerns: DE program director

Support Staffs
- administrative support
- library support
- student services
- technology infrastructure
- instructional consulting

Concerns and Interests of Key Stakeholders

Faculty

Despite the recent expansion of distance education programs in higher education, many faculty members resist participation (Olcott & Wright, 1995; Landstrom, 1995). In most dual-mode institutions faculty who are not participants in the DE program tend to fear or suspect that the courses are not as rigorous as regular courses and are concerned about factors such as lack of release time, lack of technical support from the institution, and workload (Betts, 1999). These concerns plus concerns about maintenance of traditional power relationships and protection of intellectual property rights are regularly reflected in statements issued by faculty interest groups (American Association of University Professors, 1999; University of Illinois Faculty Seminar, 1999)

On the other hand, faculty members who are prone to participate in DE seem to do so out of personal interest in experimenting with new technology. Betts (1999) found that intrinsic rewards such as intellectual challenge, personal interest to use technology, and perceived research opportunity positively influenced faculty participation in distance education. Flexibility of scheduling for the instructor seems to be another motivator for participating in DE (Taylor & White, 1991).

In our own research, we found that even though there were no direct incentives for faculty to participate in DE and that teaching distance courses was voluntary and that there was general agreement among the faculty that distance courses are more time consuming than traditional courses, participants still volunteered to invest their time and effort in DE. The main motivation for participating faculty was personal interest and satisfaction, which is consistent with Betts (1999).

Students

Students who become participants in DE programs are attracted by a number of features, including convenience in access and use, reliable delivery and support, engaging and challenging instruction, participation in a learning community, and applicability of courses to accredited degree programs (Moore & Kearsley, 1996; Gale, 2000; DiPaolo, 2000).

In our own research, students were most concerned with program quality. They expected high quality education equal to the traditional program. However, they argued that expectancy related to academic work should be maintained at the same level as in traditional classroom instruction. Technical support was mentioned as an essential element that should be provided at the institutional level. Easy to use, reliable service was critical. "Good" pedagogy that engages students in learning was also expected, although students with different learning styles may disagree on what "good" pedagogy means.

Students who are not participants in DE but are part of the traditional program reflect some non-participating faculty concerns: maintaining the integrity of the degree and preserving their traditional privileges.

Administrators

Administrators, such as deans and department chairs, who are concerned primarily with academic affairs tend to focus their concern on accreditation and quality assurance and integrity with existing organizational structures and arrangements.
Those whose interests focus more on business matters are concerned with service accessibility, cost-effectiveness, copyright and intellectual property rights, and faculty compensation norms (Lewis, Levin, & Greene, 1999).

Our own research showed that control of academic quality is the biggest concern among administrators. Including establishment of infrastructure to support distance program in coordination with the existing organization structure, administrators were also anxious about student satisfaction that is represented with student course or program enrollment and completion rates.

Support Staffs

Schlosser and Anderson (1994) categorized support staff into three main groups –technical personnel, clerical personnel, and educational personnel. In our own research, we have identified five different subsets of staff support, each of which has distinct and critically important roles: administrative, library, student services, technology infrastructure, and instructional consulting. Without any one of these the DE system fails.

- *Administrative.* This group takes care of the policies and everyday procedures for operating the DE program. Their concerns revolve around keeping the enterprise alive and healthy.
- *Library.* Just as the library is often taken for granted within the context of the university, so are library services often overlooked within DE. Yet students and faculty both expect that students will have quick and convenient access to textbooks, reserve readings, and research sources. Librarians' concerns focus on how to meet students' expectations for rapid and easy access within the constraints of tight budgets (Alford & Sheu, 2000).
- *Student Services.* Those with experience in the day-to-day operations of DE programs understand that student satisfaction is highly dependent on the nuts and bolts of admissions, registration, fee payment, credit transfer, academic advisement, and other such routine student services. Student service personnel's concerns revolve around retaining students by providing them with responsive service.
- *Technology infrastructure.* We are assuming that the delivery systems for DE will continue to evolve toward computer-based systems, such as the Web. In this case, the ease of use and reliability of the technology looms large, especially for students and faculty. Nothing diminishes enthusiasm faster than frustration with the technology. Hence, the technology personnel have an interest in establishing hardware and software protocols with the lowest probability of error and fewest complaints.
- *Instructional consulting.* Like the library, instructional consulting services are often taken for granted, but in many organizations DE courses cannot exist without assistance in terms of instructional design and programming. In our research, instructional consultants showed interest in designing and developing high quality

courses with the least stress on faculty. They also felt that an important part of their job was challenging the faculty's pedagogical assumptions.

Next Steps

Having identified the key constituencies and their primary concerns, the next step is to devise, and then test, strategies for involving key stakeholders in the process of change in ways most likely to lead to successful implementation and maintenance of the DE program.

References

Alford, P., & Sheu, F. (2000). Library services for distance education: Making them work for the IST online program. Unpublished paper. Indiana University.

American Association of University Professors. (1999). AAUP report on distance education and intellectual property. *Footnote, 20*, 4-5.

Betts, K. S. (1999). *Factors influencing faculty participation in distance education in postsecondary education in the United States: An institutional study*. Ed.D. Dissertation, George Washington University.

DiPaolo, A. (2000). Online education: myth or reality. Keynote presentation at Alliance for Distance Education Summit and the Teaching and Technology Conference. Available online at http://scpd.stanford.edu/educa/slide1.html

Dormant, D. (1986). The ABCDs of managing change. In *Introduction to performance technology*. Washington, DC: National Society for Performance and Instruction, 238-256.

Duck, J. D. (1983). Managing change: The art of balancing. *Harvard Business Review, 71*(6), 109.

Gale, C. (2000). Online learning: A student perspective. *Syllabus, 13*(5), 52-53.

Keast, D. A. (1997). Toward an effective model for implementing distance education programs. *American Journal of Distance education, 11*(2), 39-55.

Kotter, J. P. (1995). Leading change: Why transformation efforts fail. *Harvard Business Review, 73*(2), 259.

Landstrom, M. (1995). The perceptions and needs of faculty in distance education courses in a conventional university. *Canadian Journal of Educational Communication, 24*(2), 149-157.

Lewis, L, Levin, D., & Greene, B. (1999). *Distance Education at postsecondary education institutions: 1997-98.* U. S. Department of Education, National Center for Education Statistics. Available: http:/nces.ed.gov/pubsearch/pubsinfo.asp?pubid=200013

Middleton, A. J. (1997). How effective is distance education? *International Journal of Instructional Media, 24*(2), 133-137.

Moore, M. G., & Kearsley, G. (1996). *Distance education: A systems view.* Belmont, CA: Wadsworth.

Olcott, D., & Wright. (1996). Destination 2000: Strategies for managing successful distance education programs. *Journal of Distance Education, 11*(2), 103-115.

Schosser, C. A., & Anderson, M. L. (1994). *Distance education: Review of literature.* Washington, DC: Association for Educational Communications and Technology.

Taylor, J. C., & White, V. J. (1991). Faculty attitudes for teaching in distance education: An exploratory investigation. *Research in Distance education 3*(3), 7-11.

University of Illinois Faculty Seminar. (1999). Teaching at an Internet distance: The pedagogy of online teaching and learning. Available: http:/www.vpaa.uillinois.edu/tid/report/tid-final-12-5.pdf

Willis, B. (1992). *Effective distance education: a primer for faculty and administrators.* Fairbanks: University of Alaska Publications.

Biographical Sketches

Michael Molenda is an associate professor in the department of Instructional Systems Technology at Indiana University since 1972. He is coauthor of *Instructional Media and Technologies for Learning* (6th ed., 1999). He teaches graduate courses on instructional technology foundations and distance eduation.

Address: Education 2234
Indiana University
Bloomington, IN 47405
E-mail: molenda@indiana.edu
URL: http://www.indiana.edu/~mmweb98/index.html
Phone: (812) 856-8461
Fax: (812) 856-8239

Ji-Yeon Lee is a doctoral student at Instructional systems Technology, Indiana University. She has a master's degree in Instructional Technology from Seoul National University, South Korea.

Address: Evermann Apt. 347
Bloomington, IN 47408
E-mail: leej@indiana.edu
URL: http://php.indiana.edu/~leej/home.htm
Phone: (812) 857-7501

Jeong-Eun Oh is a doctoral student at Instructional Systems technology, Indiana University. She has a master's degree in Instrucitonal Systems Technology form Indiana University.

Address: 918 Woodbridge dr.
Bloomington, IN 47408
E-mail: jeoh@indiana.edu
Phone: (812) 323-0486

The Key to a Dynamic Learning Environment: The Mater Misericordiae Hospital– Institute of Healthcare Informatics Experience

Ms. Brid Moran, Internet Services Manager
Mater Misericordiae Hospital
Dublin, Ireland

Preface

The Mater Misericordiae Hospital (MMH) in conjunction with University College Dublin (UCD), to provide professional qualifications and training in healthcare Informatics for healthcare professionals, established the Institute of Healthcare Informatics (IHI). University College Dublin is the largest university in Ireland and is internationally recognised for the excellence and quality of its medical and nursing teaching. The Mater Misericordiae Hospital is a university teaching hospital providing acute tertiary specialist care. The Institute is the forerunner in the development of the Virtual Study Centre (VSC). The Institute co-ordinates, develops and monitors the production of specific courses utilising the re-engineering protocol designed by the IHI. The re-engineering of courses which would normally be taught in the traditional environment and their transition to the Virtual environment is a key element of the VSC.

Introduction

The proliferation of new medical technologies and methodologies is affecting the delivery of healthcare services. Many healthcare professionals are faced with these new technologies and methodologies with little or no training. Similarly the way in which healthcare is delivered is transforming and the whole infrastructure which supports the dissemination of information in the healthcare area has changed. As a result, the ever increasing number of technologies and methodologies being developed all point to an enormous potential which can be harnessed to lead the way to the healthcare environment of the future.

Coinciding with this, the thrust and focus of higher education is moving from a traditional university centred process to a more student-orientated one. The Institute of Healthcare Informatics took cognises of this and started researching into the various alternatives to the traditional classroom teaching. The IHI like many organisations found that the Internet's propensity for real-time interaction made computer-based training or distance learning, the most viable tool for accommodating medical education needs. As a result, the Institute developed the concept of the Virtual Study Centre (VSC), utilising methodologies, which take advantage of the developments in web-based computing and communication infrastructures to specifically address the difficulties commonly associated with existing methods of distance learning. The paper outlines and defines the optimal environment for undertaking of multimedia web-based training.

The aims of the Virtual Study Centre are "to provide an active educational environment where students are encouraged to develop their own learning objectives within a particular subject area, as well as studying defined course work. It will establish a collaborative learning environment, which facilitates interaction accessible through an Internet browser. VSC attempts to provide innovative learning methodologies in the following ways: It will provide evidence of improved learning processes through the utilisation of advanced interactive training systems, to support just-in-time training and life-long learning processes on an individual and organisational basis. It will demonstrate systems to enhance the naturalness of human computer interaction through more cognitive intuitive interfaces. It will provide techniques for the modelling and monitoring teacher/pupil user behaviour and the acquiring and the dissemination of task, application and subject specific knowledge. It will develop guidelines for the re-engineering of courses according to the new web-enabled multimedia environment".

Technology must be used wisely – the challenge for the VSC was to be both adaptive and effective in a technological dynamic world. As Stephen Andriole points out "the technology is not the issue or the problem. It's how you integrate your own work style and responsibilities and duties at work with this other activity".(1) The use of multimedia technologies in the provision of courseware was to ultimately help the students develop a wider and deeper understanding of the subject they are studying. The objective was to productively enhance teaching and learning while providing education to a wider span of students who under normal conditions could not enrol in the course(s).

Optimal Framework

"A major purpose of any learning tool should be to provide teachers and lecturers with the facility to match the desired educational outcomes of Web-based courses with the learning tools which have the greatest potential to achieve those outcomes".(2) The aim of education is the development of reflective, creative, responsible thought and we felt that the provision of a mix of media or technology, which enables with relative ease, the accommodation of all learning styles being reached was our main requirement from each of the products that we evaluated. A product or a group of software applications that replicate the actual classroom environment was a requirement of the VSC.

Teaching and learning are enhanced when visualisation, motion and text are synchronised into one source of knowledge and passive learning is transformed into interactive dynamic learning. Using multiple types of media (video, audio, data) ensures that all learning styles are met and that significant methods for interaction are provided. Technology does not guarantee productivity; but coupled with changes in pedagogy, economies of scale, and a paradigm shift to individualised, self paced mastery of learning, technology can make greater learning productivity possible.(3)

Educational Theories

Web-based training (WBT) is an innovative approach to the use of media to educate. The mix and blend of media is important, as is the use of text. Text should be kept to a minimum, as it is often difficult to read online. Alternatively, media can be used to enhance the text and offers a stimulating learning environment. WBT needs to reflect both technology and experience of learning in their design. Educational pedagogies enable us to make an informed decision regarding technological choices and our implementation of media. As the American Philosopher, John

Dewey illustrates in his work on the Constructivism educational theory, "interaction and continuity" are the core characteristics of effective teaching and learning. In other words, we must design instruction so that each individual learner can effectively build on what they know. (4)

Similarly, Knowles' general theory of Andragogy, emphasises the importance of experience as well as self-direction and intrinsic motivation. From the andragogical perspective, the adult learner is self-directed and desirous of a very active learning environment, which includes actual experience as much as possible. "Andragogical practice treats the learning-teaching transaction as the mutual responsibility of learners and teachers".(5) Andragogy makes the following assumptions about the design of learning: (1) Adults need to know why they need to learn something (2) Adults need to learn experientially, (3) Adults approach learning as problem-solving, and (4) Adults learn best when the topic is of immediate value. In practical terms, andragogy means that instruction for adults needs to focus more on the process and less on the content being taught.(6) The most effective way of implementing these requirements is therefore web-based training and the use of multimedia to deliver course content.

Education is undergoing an exciting and promising change. Web-based training is seen by many as a potential and promising means of addressing the main goals of education and pedagogical innovation. Education needs to be more accessible, at a lower cost and stimulating, what better way to deliver this and address the goals of the educators, than to embrace the power of the Web. Web-Based training is easy to distribute. One only needs a modem, an Internet browser and a phone line. Access costs are falling rapidly, thus promoting the growing use of the web. Courses posted online are easy to update and maintain and users do not have to wait for new version of the software of course materials. The potential of the web to provide a library of learning links is immense and is another favourable advantage for using the web. However, the main advantage is the fact that the Internet can overcome time and distance to reach students. The opportunities and potential outweighs the obstacles faced by web-based trainers.

Successful implementation of the technology does not remove teachers from the scene, but casts them in new roles as learning coaches and motivators who can create humane environments for students as they work their machines. Online learning is intended to supplement, assist and complement other kinds of delivery and enhance the educational experience. Interactive instructional systems enhance both student and teacher performance through technology that improves learning efficiency, comprehension, problem solving, and decision-making. The concept of a "learning environment" that is not a traditional classroom offers unlimited opportunities to demonstrate to students that learning can take place anywhere, at any time, and at any age. (7)

Learning Environment

The virtual classroom environment provides greater flexibility to students, who may not be able to attend classes at a "bricks and mortar" college campus because of geographic distances and/or work schedules and personal commitments (JIU). The visual and aural presence heightens the sense of social presence, while broadening the learning experience. A cognitive ergonomic environment supports personalised access to content, knowledge and information through the utilisation of user-friendly application thereby realising the potential of the information society.

The main elements of a virtual learning environment will be discussed which incorporate results from various research projects.

A study carried out by the American Society for Training and Development shows that the long-term retention of knowledge occurs under two situations. "1) Students are participating in an interactive environment - best when the training sessions are live and include interactive multimedia sources; 2) there's a formalised learning schedule, such as a structured class with an instructor to complement self-paced homework." The interaction of collaborative work and technology often produced positive results in student achievement. (8) Distance education has generated so much excitement because it offers a new and promising means of addressing some of the most time-honoured goals of education and pedagogical innovation: 1) How can we make learning more accessible? 2) How can we promote and improve learning? 3) How can we accomplish the above while containing or even reducing the per unit costs of education? (9) The main characteristics of the optimal environment will also be outlined fully in the presentation.

The Future and Beyond

Market research is now predicting the gap between computer-based training and distance learning can be bridged by a network connection. The VSC has tapped into the Internet's backbone and is now part of the spinal cord providing high quality interactive courses. "For learning to take place with any kind of efficiency students must be motivated. To be motivated, they must become interested. And they become interested when they are actively working on projects which they can relate to their values and goals in life." (10)

Our vision for the future therefore is: *"To strive towards the best conditions in which learning can take place. To utilise the best technology available to us and to keep in mind what is to come; To motivate, encourage, and guide where required and never to lose sight of the learner as the core."*

References

1. http://www.pbs.org/netlearning/exp2.html
2. Johnstone D.B., 1992; Twigg, C.A., 1992. Multimedia Education Unit, The University of Melbourne.
3. Boettcher, J. *nuggets about the shift to web-based teaching and learning*. Florida State University. http://www.csus.edu/pedtech/nuggets.html
4. Knowles
5. http://www.lincoln.ac.nz/educ/tip/12.htm
6. http://www.newhorizons.org/positivetrends.html#technology
7. Means, B. 1993. *Using technology to support education reform*. Washington, DC: Office of Educational Research and Improvement.
8. http://wellspring.isinj.com/faq_dl.html
9. Gus Tuberville, President of William Penn College

Biographical Sketch

Ms. Bríd Moran holds a Degree in Economics and Sociology and a Higher Diploma in Computer Science from University College Dublin, Ireland. Experience in developing web-based tutorials and training documentation and has teaching experience in a Cyber based environment. She is currently Internet Services Manager for the Mater Misericordiae Hospital with main responsibility for E-mail, Internet and Firewall administration and training. As part of this role, she has developed the Web Publishing Guidelines for the hospital and has formulated a comprehensive Information Technology Security Policy for the hospital. She has presented a paper at Mednet'99 – The 4th World Congress on the Internet in Medicine in Heidelberg, Germany and also in Dublin at the Healthcare Informatics Society of Ireland Annual Conference, 1999.

Address: Mater Misericordiae Hospital
Management Services Department,
58 Eccles Street,
Dublin 7
Ireland
Phone: 353-1-8304470
Fax: 353-1-8307728
E-mail: bmoran@mater.ie

Distance Education and Copyright Law:
Facing the Challenges

Glenda Morgan
Learning Technology Analyst
University of Wisconsin System

Introduction: The Challenge of Law and Technology

Law has always struggled to keep pace with technological change. The efforts by legislators and courts to craft law in such a way that its basic principles are clear and applicable in a range of often-unforeseeable circumstances have often been in vain. New technologies are invented, new uses found for old technologies or new implications of technologies emerge that stretch the applicability and usefulness of current law in regulating the use of the technology. One of the great examples of this has always been (and continues to be) the role of the law in the US in regulating technology and the right to privacy. But another (and perhaps less celebrated) arena where law has lagged behind technological innovation is that of distance education and copyright. In this paper I describe the way that law has lagged behind technological developments enabling distance education. I look at the way that the exemptions provided in copyright law are structured very much around the idea of broadcast technology and how they now inhibit teaching using the web-based technologies that are starting to dominate distance education. I then examine the recommendations in the Report on Copyright and Digital Distance Education conducted by the Copyright Office (hereafter, the Report). While most of the recommendations would benefit distance education and allow for an expansion in the use of materials in online courses, there are also a number of more troubling aspects to the Report. In particular, the focus on licensing and the way that digital transmissions are considered reproductions are a cause for concern. In addition, I argue that the recommendations in the Report are likely to continue to be opposed by the copyright industries.

The 1976 Copyright Act and the Distance Education Exemption

Copyright in distance education in the United States has been governed for the past twenty-four years by the provisions of the 1976 Copyright Act. A number of the more general provisions of that act cover distance education just as they do conventional face-to-face classroom instruction. Fair use, for example, applies to distance education just as it does to all other forms of education, criticism and commentary. However, recognizing that there were specific challenges involved in teaching at a distance, the drafters of the Copyright Act included a set of exemptions specifically for distance education. These were originally designed in order to free distance education from some of the strictures that strict adherence to copyright law might have imposed. Section 110 of the Copyright Act exempted performances and displays of copyrighted works when they occurred in the course of systematic instruction. Section 110(1) exempted performances and displays in the course of face to face classroom teaching and Section 110(2) exempts performances and displays in the course of distance education. However, the kind of distance education that they were talking about when the law was written in 1976 was largely instructional broadcasting which was very different from how technology mediated distance education occurs today. With that in mind, Section 110(2) included a number of quite serious limitations and restriction. The exemption only applied if:

- The performance or display was a regular part of systematic instructional activity by a nonprofit educational institution or governmental body.
- Was directly related to and of material assistance to the teaching content.
- Was primarily for reception in classrooms or places of instruction or to persons whose disabilities prevented them from attending classrooms, or to government employees.

Naturally these kinds of restrictions do not apply well to the "any time, any where" kinds of distributed distance education offered increasingly over the Web. Both face to face instruction and distance education were limited by the restriction of the exemption right to performances of nondramatic literary and musical works. But distance education was further limited by the fact that only performances were covered and not the transmission and reproduction that is traditionally involved in providing computer mediated distance education. Further the restriction of the exemption to materials received in a traditional classroom setting greatly limit contemporary web-based distance education.

The Copyright Office Report on Copyright and Digital Distance Education

In the light of these difficulties and the fact that old laws were out of step with the burgeoning field of distance education, in 1998 Congress recommended that the Copyright Office look into the matter and recommend changes to copyright law. In May 1999 the Copyright Office released their Report on Copyright and Digital Distance Education. After hearing testimony from a range of interested parties the Report suggested a number of changes to copyright law in order better to facilitate distance education.

1. That the meaning of transmission be clarified to include digital as well as analog means.
2. That the exemption be expanded to include transmission over digital networks so that a performance or display is technologically possible.
3. Emphasize the concept of mediated instruction. Making a work available digitally should not be a substitute for the purchasing of a copy of a work or text. So where something is made available it should be to illustrate a point so that it is analogous to something that would occur in a classroom setting.
4. Eliminate the requirement of a physical classroom to reflect today's realities. Though this should not mean that materials become available to the general public, rather, only to students enrolled in a course, regardless of their physical location.
5. That additional safeguards be put in place to reduce the extra risks to the market for works that results from works being used and transmitted in digital form. Thus transient copies necessary for a transmission to occur should be retained no longer than is reasonably necessary. Second, those invoking the exemptions should have in place informational and educational programs relating to copyright for their students,

faculty and staff. Third, reasonable technological protections should be put in place by institutions to prevent unauthorized copying (e.g., password protecting sites, etc.).

6. Maintain existing standards of eligibility i.e. nonprofit educational institutions. There had been considerable debate about this particularly within the content industry which at times had suggested only accredited schools be allowed the exemption and that the line between profit and nonprofit was increasingly blurred in distance education.
7. Expand the categories of works covered to include audiovisual works, sound recordings and dramatic literary and musical works. In particular there seemed to be a strong need to cover audiovisual works as they are used a great deal in digital distance education. The Report thus recommended that this category be added but with limitations. They could be used but only reasonable and limited portions.
8. Require use of lawful copies.
9. Add a new ephemeral recording exemption so that for example it would be legal for someone to copy something and place it on their server in order to transmit it to students in a distance education class.

Librarians and educational institutions largely welcomed these suggestions. They expand the range of what can legally be done in the context of distance education. In particular the recommendation to expand the range of works that could be used, and the lifting of the restriction on classroom instruction was particularly welcomed. The Report is reassuring in the way that it constantly reiterates the fact that copyright in the United States is founded on a balance between the interests of copyright holders and the interests of the public at large. The Report has a particularly interesting analysis of the role of fair use guidelines and in some of the dangers inherent in the use of guidelines. However, there are a number of features of the Report that I think should be of some concern to distance educators, particularly the issues of licensing and transmission.

Problems Posed by the Analysis in the Report on Copyright and Digital Distance Education

Licensing

The Report focuses a great deal on the issue of licensing. There is a great deal of analysis on the difficulties that licenses pose to distance education practitioners. Copyright holders are unused to requests for permission to use materials for distance education in a digital format and so licenses are hard to obtain or frequently very expensive. While acknowledging these difficulties and recognizing that there are many instances where licenses are either not necessary or appropriate, the effect of the discussion is to cast licensing and particularly new technologies that enable licensing as a big part of the solution to the intellectual property problems facing distance education. In looking at the issue this way, some of the dangers posed to education and the free exchange of information by technology mediated licensing are not explored. I argue that an exploration of these possibilities and problems is necessary given the likelihood that licensing technologies are going to play a larger and larger role in regulating copyright.

Transmission

In arguing that law relating to distance education should be amended, the Report makes frequent reference to that fact that the use of digital technologies in most cases involves making copies, sometimes of an ephemeral nature, in the networks over which transmissions are made. In these discussions, the Report is trying to make allowances for the way that the technology works and ensure that the operation of digital technologies in distance education do not raise additional legal issues. However, in making this claim the Report reflects similar claims made elsewhere for example in the Report of the Working Group on Intellectual Property Rights, Intellectual Property and the National Information Infrastructure released in 1996. The approach taken by the Working Group on Intellectual Property Rights and taken by the US delegation to the 1996 meeting of the World Intellectual Property Organization that reproduction was involved in the process of transmission was roundly criticized by copyright lawyers and computer professionals within the US and abroad. The sections in the Distance Education and Copyright Report do not reflect the lack of consensus on this issue, which I believe has some serious consequences.

Despite these kinds of problems the Report does provide a reasonably forward thinking and balanced approach to copyright and distance education. However, we are unlikely to see many of its best recommendations placed into law. The copyright industries are likely to continue to oppose the extension of exemptions given the size and value of the perceived distance education market and the promise that technology offers for providing secure content and seamless licensing.

References

US Copyright Office. (1999). *Report on copyright and digital distance education. A report of the register of copyrights*. Washington DC: Copyright Office.

Working Group on Intellectual Property Rights. (1996). *Intellectual property and the national information infrastructure: The report of the working group on intellectual property rights*. Washington, DC: US PTO.

Biographical Sketch

Glenda Morgan is the Learning Technology Analyst in the Office of Learning and Information Technology in the University of Wisconsin System Administration.

Address: 1654 Van Hise
1220 Linden Drive
Madison, WI 53706
Phone: (608) 265-9559
E-mail: gmorgan@uwsa.edu

Teacher Training and Support for Web-Supplemented and Web-Based Instruction in Secondary Schools

Zane Olina, Graduate Student
Arizona State University

Dr. Wilhelmina Savenye
Associate Professor of Learning and Instructional Technology
Division of Psychology in Education, Arizona State University

Dr. Herbert Dwyer, Campus Technology Director
McClintock High School

Session Objectives

During this session participants will learn:

- About the major barriers that teachers face when trying to incorporate web-supplemented and web-based teaching into the school curriculum;
- Practical strategies for providing adequate support and training to teaching staff on implementation of web-supplemented and web-based instruction in secondary schools.

Background of the Virtual School Project

Over a six-year period, Dr Dwyer and a team of staff members at McClintock High School in Tempe, Arizona, explored ways to improve student success while simultaneously reducing instructional costs. Technology as a tool for change played a significant role in most of the solutions that were explored. Increasing access to computers and the internet by students both at school and off-campus resulted in a proposal for implementing both web-supplemented and web-based instruction on a school-wide basis.

During the first phase of the project, emphasis was on piloting two classes/teachers. One teacher began to develop web-supplemented instruction for a freshman English class. The other joined the faculty of The Virtual High School, a consortium project administered through the Concord School District in Concord, Massachusetts, that offers web-based, advanced level high-school courses to students from all across the United States. It is envisioned that the second phase of the project will expand to involve all high schools in the Tempe Unified High School District.

From the start of the project it has been clear that technology is simply a tool rather than a replacement for superior instruction. Teachers have been and will be the primary providers of good instruction. Yet, the major missing component in most technology-integration projects in schools has been a lack of adequate teacher training and support (Office of Technology Assessment, 1995; President's Committee of Advisors on Science and Technology, 1997).

The Teacher-Support Component

The focus of the proposed presentation is on teacher support. Based on the preliminary work of the school-district technology personnel, it was decided to conduct a thorough review of approaches and strategies for teacher professional development and support in technology integration. It was envisioned that this study would further inform the decision-making process regarding the implementation of web-based and web-supplemented instruction at McClintock High School and across Tempe Unified High School District. Zane Olina carried out the investigation as a class project in an advanced graduate-level instructional-design class under the supervision of Dr. Wilhelmina Savenye and Dr. Herb Dwyer. The class project represents the beginning of a district-university collaborative effort. This presentation will describe the major findings of the investigation and offer practical strategies for teacher professional development and support.

Needs Assessment and Content Development

During the teacher-support investigation, data were collected from four main sources. First, a review of relevant print and online resources was carried out. Secondly, the review of theoretical and applied articles was supplemented by analysis of individual case studies of professional-development programs or resources available for teachers on the web.

Interviews were conducted with five teachers at McClintock High School. These teachers were identified by Dr. Herb Dwyer as the core cluster of teachers who had expressed interest in using computers in the classroom. The teachers were asked about their concerns regarding the use of computers in teaching, their training needs and the types of support that they would need for implementing web-based and web-supplemented teaching in the classroom.

Data from five school or district-level technology coordinators and two faculty instructional-support staff members were also collected through interviews or an e-mail questionnaire. The respondents were asked about major barriers that teachers face regarding integration of computers, training needs and best practices for providing professional development opportunities, support, and incentive systems to teachers.

Findings

The presentation will provide a comprehensive overview of the findings of the investigation, however a brief summary of the results is presented below.

Major Barriers to Technology Integration

The most common barriers to technology integration in teaching are the increased preparation time, a lack of awareness of the general benefits of distance education, faculty compensation and incentives, access to appropriate technologies, a lack of shared vision for distance education in organization, institutional barriers and lack of support staff to help course development (Berge & Muilenburg, 2000; Moore & Kearsley, 1996; Office of Technology Assessment, 1995).

According to both the literature sources cited above and the accounts of the teachers and technology coordinators, the lack of time appears to be the single major factor hindering technology integration. Robinson (1995) suggests that development of information technology in education can be seen as part of the broader field of educational change in which there is a rich and useful literature (Fullan, 1993). Thus technology-integration efforts should be addressed as part of systematic efforts at improving classroom practice.

Teacher Training Needs

The University of Illinois Faculty Seminar Report (1999) highlights two distinct features of online pedagogy. First, the teaching paradigm must change from the traditional lecture format to one more suitable for online instruction. Secondly, the instructor has an important role in moderating the interaction. Porter (1997) suggests that only educators possessing certain qualities can be successful distance-learning instructors. Such qualities include the ability to learn new technology, a performance personality, flexibility, and time to create new materials and methods.

Training Models

Teacher training should focus on the use of technology in teaching rather than acquisition of skills using software (OTA, 1995; The President's Committee of Advisors on Science and Technology, 1997). No single approach is best for effective teacher professional development (OTA, 1995) and a variety of approaches should be used in combination at any given time. Some common strategies are developing technology rich classrooms as demonstration sites, training master teachers who then serve as resources to their colleagues and providing access to technical support staff.

Support Systems

Support systems should primarily address the major barriers to technology integration mentioned above. Unless a systemic approach to technology integration is adopted individual teacher training initiatives are likely to be ineffective. Providing time for experimenting with new technologies, and the support and incentives for doing so, are some of the most effective strategies. The report prepared by University of Illinois (1999) emphasizes the need for recognizing faculty intellectual property rights as the best way of assuring high quality of online teaching.

Implications for Teacher Professional Development and Support

The literature review, the interviews with the teachers, and the conversations with the technology coordinators have demonstrated that in order for technology integration to take place a comprehensive and systemic approach is necessary. The presentation will discuss a range of strategies for teacher professional development and support including the following:

- Developing a clear vision for technology integration that is directly linked to improvement of classroom practice;
- Setting up a campus-wide task force for technology integration;

- Allocating adequate financial resources for teacher professional development;
- Using a wide range of professional development strategies that are tailored to the particular needs of different groups of teachers;
- Providing early adopters with adequate technology in their classrooms;
- Providing teachers with first-hand distance-learning experiences; and
- Clarifying campus-wide intellectual-property rights policies regarding online courses developed by teachers.

Session participants will receive a handout with a summary of practical strategies suggested for teacher professional development.

References

Berge, Z. L., & Muilenburg, L.Y. (2000). *Barriers to distance education as perceived by managers and administrators: results of a survey.* In Melanie Clay (Ed.), *Distance learning administration annual 2000.*

Fullan, M. (1993). *Change forces: Probing the depths of educational reform.* New York: Falmer Press.

Moore, M., & Kearsley, G. (1996). *Distance education: A system's view.* Belmont, CA: Wadsworth.

Porter, L. R. (1997). *Creating the virtual classroom. Distance learning with the Internet.* New York: John Wiley & Sons.

President's Committee of Advisors on Science and Technology. (March, 1997). *Panel on educational technology report to the president on the use of technology to strengthen K-12 education in the united states.* [Online]. Available 8 April, 2000 at: http://www.whitehouse.gov/WH/EOP/OSTP/NSTC/PCAST/k-12ed.html#5.t

Robinson, B. (1995). *Teaching teachers to change: the place of change theory in the technology education of teachers.* [Online]. Available on 17 February 2000 at: http://www.coe.uh.edu/insite/elec_pub/html1995/0311.htm.

University of Illinois. (1999). *Teaching at an Internet distance: The pedagogy of online teaching and learning.* The report of a 1998-1999 University of Illinois Faculty Seminar. [Online]. Available 1 February, 2000 at: www.vpaa.uillinois.edu/tid/report/tid_report.html

Biographical Sketches

Zane Olina is a doctoral student in Learning and Instructional Technology at Arizona State University. She has a Masters of Education degree in Learning and Instructional Technology from Arizona State University. Before undertaking full-time graduate studies Zane Olina directed a non-profit organization dedicated to environmental education and school improvement in Latvia.

She has designed and lead numerous teacher training workshops in Latvia on such topics as project based learning, curriculum planning and assessment, school development planning, incorporation of environmental education into the school curriculum. Her special interests lie in the area of teacher professional development. She has also designed and delivered training of trainers sessions on such topics as design and delivery of effective training events and project planning and management for teacher trainers, adult educators and leaders of non-profit organizations.

Address: 1201 S.McClintock Dr. Apt. 239
Tempe, AZ 85281
E-mail: zaneo@asu.edu
Phone: (480) 968 6256
Fax: (480) 965 0300

Wilhelmina Savenye is an Associate Professor in the College of Education at Arizona State University. She has also served on the faculty in the Department of Curriculum and Instruction at The University of Texas at Austin and in the Department of Educational Technology at San Diego State University. Her areas of focus are evaluation, instructional design, design of interactive multimedia, and use of interactive technologies in training and teaching. She teaches courses in educational evaluation, instructional design and development, learning and motivation, and design and production of interactive computer and multimedia materials. She has also taught courses in interactive video, computers in education and training, television production, and media development. Savenye is the author of numerous publications, including a recent chapter on qualitative research methods in educational technology. She has presented over fifty papers at national and international conferences. Savenye has served as a consultant to many educational and training organizations.

Address: Division of Psychology in Education
Arizona State University
P.O. Box 870611
Tempe, AZ 85287-0611
E-mail: savenye@asu.edu
Phone: (480) 965 4963
Fax: (480) 965 0300

Herbert Dwyer received a Doctorate in Learning and Technology from Arizona State University. While a graduate student at ASU he wrote a transparent data collection instrument that has been used by a number of students at ASU and other universities around the country to collect in-process data on how students use computers to complete tasks. He also works as a consultant to high tech companies in the area of instructional design and development on training materials for ERP systems. After designing several computer labs to facilitate collaborative learning, his attention has been focused on web delivery systems for training and education. A three strand systematic approach to delivering instruction via the web has been developed at McClintock High School to meet student needs across the curriculum. By joining "The Virtual High School" students now have access to over 150 high level classes not available elsewhere in the district such as AP Statistics, Microbiology, and International Diplomacy. Failure rates have been decreased substantially with the help of web-supplemented classes in English. Dealing with suspensions, illness, and other cases of students being off campus is being addressed with subject specific courselets or ILO's. The goal of the current project is to increase student performance and lower instructional costs. With the success of the McClintock H.S. projects, Dr. Dwyer has been transferred to district offices and will be responsible for introducing web-based instruction into all seven of the district's schools.

Address: Tempe Union High School District
500 W. Guadalupe Rd.
Tempe, AZ 85283
Phone: (480) 839 0292
E-mail: HerbD@tuhsd.k12.az.us

Using the Internet to Offer Post-Baccalaureate Continuing Education Units

Richard E. Oliver, Director
Health Related Professions
University of Missouri-Columbia

Linda Butterfield Cupp, Associate Director
MU Direct: Continuing and Distance Education
University of Missouri-Columbia

Introduction

In an age where information is increasing at a dramatic rate, the nature of post-baccalaureate study is changing. Furthermore, non-traditional students are very discriminating in the learning they seek. Lifelong learners expect reliable, valid information that has appropriate application to their work setting. While many professionals seek advanced degrees, often what they need is information to keep them current in their field rather than pursuing another degree program. To remain up-to-date in their profession, they must continue to demonstrate their competency by participating in continuing education learning experiences. In addition, many professional credentialing organizations mandate minimum hours of continuing education per year to maintain licensure or registration.

The Virtual Health Care Team™

The Virtual Health Care Team™ (VHCT) is a web site of interactive cases designed for practitioners who need to stay abreast of new developments in health care, for faculty from many health-related disciplines, and for students to use as a learning tool to supplement in-and out-of-class assignments. The cases are written from a health care team point-of-view.

The cases have the following features:

- Cases are designed by content specialists, working in a team with educators, artists, photographers, and computer programmers.
- Cases follow a standard template and style guide.
- Cases present a real-life health care problem from the point of view of different professionals, such as physical therapists, speech language pathologists, occupational therapists, social workers, etc., working together as a team.
- Cases incorporate such learning theories as situated learning, problem-based learning, anchored instruction, and interactivity.
- Cases include external links as additional information resources.
- Cases allow readers to e-mail questions to the case author.
- Cases are reviewed by an editorial board to screen and monitor quality of content and links.
- Cases are used in the health related professions curriculum.

Figure 1

VIRTUAL HEALTH
CARE TEAM™

SCHOOL OF HEALTH RELATED PROFESSIONS AND SCHOOL OF MEDICINE
UNIVERSITY OF MISSOURI COLUMBIA

Assistive Devices
Sandy Matsuda, PhD, OTR/L

Breast Cancer
Karen Wingert, MEd, PT, RN

Cervical Conundrum
Diane Mueller, ND, RN, C-FNP

Congestive Heart Failure
Louise Whitener, RN, PhD(c)
B. J. Rodeman, RN, CS, M-SCNS
Coleen Kivlahan, MD, MSPH

Does He Have Alzheimer's Disease?
Chris Neal
Michael Meyer, MD

Esophageal Cancer
Marge Whitman, RN, MS, AOCN

Geriatric Assessment
Larry Petterborg, PhD
Associate Professor
Department of Physical Therapy
TWU, Dallas TX

Guillain Barré
Karen Wingert, MEd, PT, RN

Kidney Transplant
Anne R. Campbell, MSPH, CHES
2.5 CEU credit units are available with this case.

Mechanical Low Back Pain
Meganiese Lae Rug Pyn
(Afrikaans Version)
Gerald W. Browning, PT, PhD

Misuse of Antibiotics
Eddie Hedrick, BS, MT (ASCP), CIC

Near Drowning
Lori A. Weber-Hardy, Med, RRT

Paraplegic Rehabilitation in South Africa
Quinette Louw, BSc, MASP
Stefanie Lochner, BSc
University of the Western Cape
South Africa

Post-Polio Syndrome
Sindrome Post-poliomielitico
Sandy Matsuda, PhD, OTR/L

Rheumatoid Arthritis and Aerobic Exercise
Carmen Christopher, BA, SPT
Marian A. Minor, PT, PhD

Special Needs Child
Karen Browning, Med, OTC

Serreptitious Coumadin Ingestion
James F. Koukl, PhD
Director of Medical Technology and
Associate Professor of Biology
University of Texas at Tyler

Transplant Medication Mixup
Kristin Frankowski, PharmD, Rph
1.0 CEU credit units are available with this case.

URL: http:www.vhct.org

To enhance realistic, situated learning, the cases are based on real instances, although the facts are changed somewhat to avoid identification of a particular patient. The educator also finds other relevant links on the web, and the content author reviews these external links for correctness and appropriateness. The external links often present information from different points of view, which helps students access credible information on the Web and apply this knowledge to the case being reviewed.

MU Direct

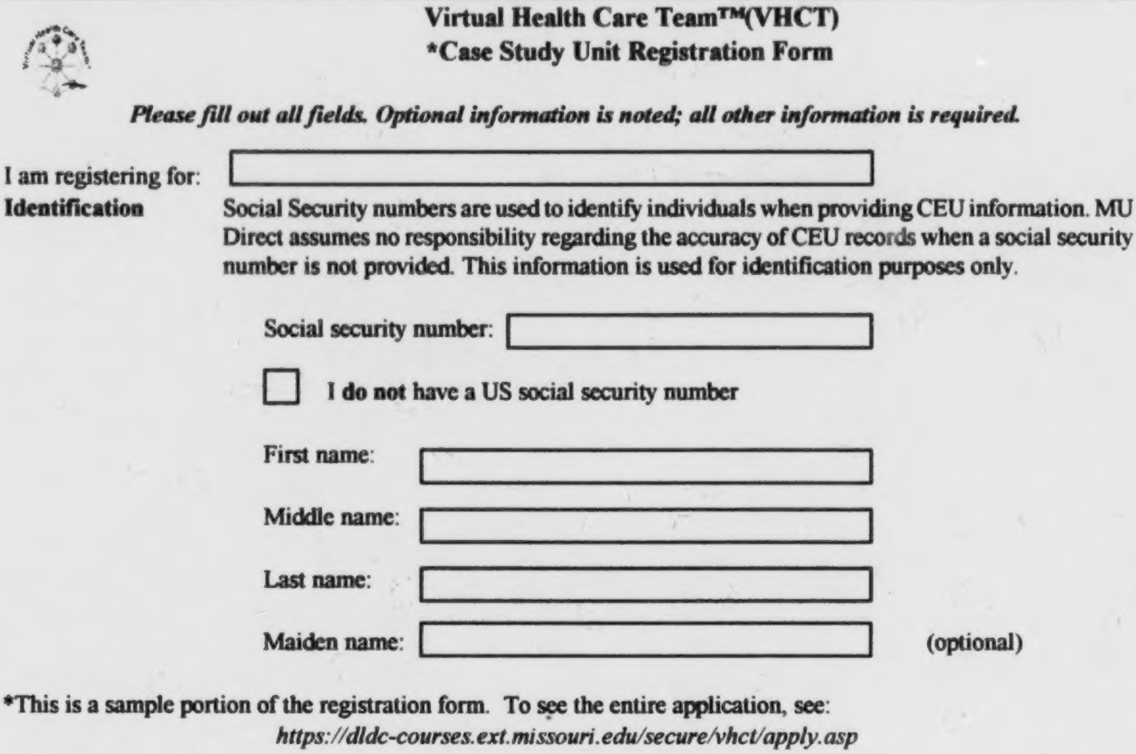
While Continuing Education Units (CEU's) are necessary for accreditation in many professions, these professionals are finding it increasingly difficult to find release time or the funding necessary to travel to conferences where they can obtain CEU's. To meet this need, the VHCT™ teamed up with MU Direct, the unit that administrates off-campus academic programs, to offer these case studies for CEU credit over the internet. The Kidney Trnasplant Case was the first case to be offered for CEU credit. Other case studies include: Assistive Devices, Breast Cancer, Does He Have Alzheimers Disease?, Esophageal Cancer, Geriatric Assessment, Guillian Barre', Low Back Pain, Misuse of Antibiotics, Near Drowning, Paraplegic Rehabilitation in South Africa, Post-Polio Syndrome, Rheumatoid Arthritis and Aerobic Exercise, and the Special Needs Child. Many other case studies are in the planning stages, and most of the remaining cases will be offered for CEU's over the next year. The user must pass a multiple-choice online exam in order to receive CEU credit, and immediate feedback is available as users progress through case and exam.

Besides educational content and quality, there were many administrative issues that needed to be addressed. Our goal was to create a seamless, online process. We wanted to create a system that would allow students to enroll, complete the course, take the exam and receive a certificate of completion totally online.

To determine the number of CEU's and educational fees for the course presented interesting dilemmas. To determine the number of CEU's, we estimated the number of clock hours that would be involved to complete the course and then applied the CEU system of 10 contact hours for each CEU. Determining what to charge for the course posed a more difficult dilemma. On one hand, earning CEU's from one's own home or place of business saves participants save an incredible amount of time and money. On the other hand, the University is trying to provide a service that is easy and affordable to professionals in the health professions.

How much of the content would be password protected was another issue. Unlike other courses, it was determined that the course content would not be password protected. Because we were interested in the cases being used for general education purposes, it was determined that it would be made accessible to the general public. However, to receive CEU credit, applicants must take an online multiple choice exam, which is password protected. Students self select their password and ID, and these are activated immediately so that they can access the course exam as soon as they have completed the case. When the student passes the exam, they are entitled to receive a certificate of completion, sent in an Adobe Acrobat file attached to an e-mail.

To create this seamless process and to make certain that applicants could have immediate access to the course, we decided that the only way students could register would be to complete an online application form located on MU Direct's homepage. Payment can be made by credit card only. Because we lack the ability to automatically process credit cards, CEU certificates are not sent until we can process their credit card payment.



Virtual Health Care Team™(VHCT)
***Case Study Unit Registration Form**

Please fill out all fields. Optional information is noted; all other information is required.

I am registering for:

Identification Social Security numbers are used to identify individuals when providing CEU information. MU Direct assumes no responsibility regarding the accuracy of CEU records when a social security number is not provided. This information is used for identification purposes only.

Social security number:

☐ I do not have a US social security number

First name:

Middle name:

Last name:

Maiden name: (optional)

*This is a sample portion of the registration form. To see the entire application, see:
https://dldc-courses.ext.missouri.edu/secure/vhct/apply.asp

The online examination is a multiple choice test of 10-25 questions. Because learning is our primary consideration, students are allowed to return to the text to review the information as needed. The exam is automatically graded and the results are immediately sent back to the students. They make take the exam as often as necessary to pass it, and the only time limit is that they have 90 days to complete the case and exam.

Conclusion

The nature of education is changing in this information and technology age, and the academy must find creative ways to bring relevant and accessible post-baccalaureate learning experiences to the professions. This trademarked web site has gained international attention because of its unique use of cases and web-based links to create comprehensive educational units of instruction that are interactive in nature. Because of the authors selected, the site's association with the University of Missouri-Columbia, an editorial board and external evaluation, end users can be assured that they are receiving credible, reliable, up-to-date, information where each case is treated much like a journal, peer-reviewed process.

The Pew Health Professions Commission lists the ability to continually access information as one of the most important competencies that should be held by health practitioners today. The VHCT Case Studies provide important information for post-baccalaureate professionals to remain competent in their field, and the use of technology demonstrates a new way for professionals to access this information and receiving Continuing Education Unit credit.

For further information, see: *http://vhct.org*
MU Direct http://mudirect.missouri.edu

Biographical Sketch

Richard Oliver is Director of the School of Health Related Professions, University of Missouri,Columbia, Missouri. As Director he has administrative responsibility for four departments and the MU Eldercare Center as well as several grant programs. The Departments include: Physical Therapy, Occupational Therapy, Communication Science and Disorders, and Cardiopulmonary and Diagnostic Sciences.

Address: Health Related Professions
University of Missouri-Columbia
504 Lewis Hall
Columbia, MO 65211
E-mail: oliverr@health.missouri.edu
Phone: (573) 882-8013
Fax: (573) 884-8000

Linda Butterfield Cupp is Associate Director of MU Direct at the University of Missouri-Columbia. With the Director, she is responsible for the overall programmatic and fiscal administration of a self-supporting continuing education unit, which facilitates university-wide, continuing and distance education outreach programs outside the College of Education.

Address: University of Missouri-Columbia
103 Whitten Hall
Columbia, MO 65211
E-mail: cuppl@missouri.edu
Phone: (573) 882-3598
Fax: (573)884-5371

Minimum Technical Competencies Required of Students in a Distance Education Course

Elizabeth Reed Osika, Manager
Instructional Services
Purdue University Calumet

Dr. Douglas P. Sharp, Vice Chancellor
Information and Instructional Technology
Purdue University Calumet

The number of courses being offered in higher education via distance on the Internet, either as a complete course or an enhancement to a traditional course, is growing tremendously. This additional course requirement adds a number of expectations on the students in order to achieve academic success. Now they are required to master not only the course content and materials, but to understand technology, troubleshoot technical problems, and interact with faculty and students in a completely new online environment. (Mory, Gambill, Browning, 1998; Schuster, J. W., 1999) The topic of students' technical skills is one that is not addressed frequently in the literature. One reason for this may be that since computer and internet use is increasing in the elementary and secondary school levels (Electronic Education Report, 10/13/99), students graduating from high school are assumed to have the skills needed to succeed technically in college (Sheffield, 1996). However, the literature suggests that "more than half of the computers used in K-12 schools are out of date." (Electronic Education Report, 9/15/99) This may contribute to the frustration expressed by faculty at our institution towards their students' lack of technical knowledge and varying computer skills.

The presentation discusses the technical skills faculty feel are essential for students to have in order to succeed in their course, as well as those skills which would be helpful for the students to have. Additionally, we will look at the technical skills students perceive themselves to possess. These skills will be compared to the requirements established by the faculty.

Methodology

The university where the study was conducted is a medium-sized public institution serving a regional, commuter population. Based on admission information from the 1999-2000 academic year, there are approximately 9,300 students enrolled in the university, with 10% of the students enrolled in graduate coursework. The average age of students in attendance is 27, with slightly more than half of the students being female.

Faculty Expectations

The first step in the study was to determine the expectations faculty had regarding student technical abilities. A census survey of the 68 faculty who used the Internet as an enhancement or primary instructional medium was attempted. Of the 68 faculty surveyed, 44 responded, providing a 65% return rate. The distribution of schools represented by the respondents matched the distribution of the faculty at the university. (See Table 1)

Table 1: School Distribution of Faculty Respondents

School	# of Respondents
Biology	1
Behavioral Sciences	2
Chemistry/Physics	3
Construction Technology	1
Education	6
English	5
Electrical Engineering Technology	2
General Studies	1
Information Systems	6
Industrial Engineering Technology	1
Library	1
Management	5
Mechanical Engineering Technology	1
Nursing	6
Organizational Leadership	2

Student Technical Skills

The second phase of the study was to determine the level of technical competency students' possessed on each of the items listed on the faculty survey. Students' skills were assessed based on a self-assessment of their perceived abilities. While this does not address their actual skills, it provides a good estimate based on their own self-efficacy.

The items on the faculty survey were attached to a five point likert-type scale ranging from (1) Definitely Unable to Complete Task to (5) Definitely Able to Complete Task. Eighteen class sections were chosen to participate in the survey, from the list of known instructors who were using the Internet as the primary method of instruction or as a supplement to a traditional class. This provided a student population of 408.

Of the students who participated, there were 292 usable responses, providing a response rate of 72%. The respondents to the survey were primary female (62%) with a grade distribution that was heavily skewed towards freshmen (freshmen 48%, sophomores 23%, juniors 15%, seniors 5%, and graduate students 9%). The age level of the sample also leaned heavily towards the younger students (18 – 24 64%, 23 – 29 22%, 30 – 39 8%, 40 – 49 5%, 50+ 1%). The demographics of the sample are representative on the demographics of the University.

Results

Essential Items Compared to Student Abilities

Fifteen tasks were rated by at least half of the faculty to be essential for students possess in order to achieve academic success in their course. The confidence of the students' ability to achieve each task was then evaluated. (See Table 2) Only four items had 90% or more students confident in that they would be able to complete the task. Six out of the fifteen items rated as essential by the faculty had 80% or less of the students stating that they would be able to complete the task.

Table 2: Comparison of Faculty Essential Expectations to Student Abilities

Task from Survey	% of Faculty Listing Item as Essential	% of Students Stating they could Complete the Task
Access Information through the Internet	91%	91%
Send and Receive e-mail	91%	88%
Log into the University Network	84%	83%
Properly Start and Shut-Down a PC	82%	91%
Send and Receive Attachments/Files through E-mail	77%	71%
Use Spell Check to Correct Spelling Errors	77%	93%
Search for Information on the Internet Using Search Engines	70%	84%
Locate Files and Information Saved on a Disk	66%	82%
Create a Double Spaced Document	59%	90%
Copy a File from One Disk Drive to Another	57%	60%
Format a Font's Size, Typeface, and/or Color	55%	89%
Complete and Submit Information Using an Online Form	52%	67%
Demonstrate Correct Use of Alt, Ctrl, Tab, and Shift	52%	72%
Describe Functions and Use of Terms	50%	68%
Format a Disk	50%	53%

To create a real world example, suppose you took your class to the computer lab to do some research on the Internet, one out of ten students would have problems turning on the PC and the same amount would have problems locating information on the Internet. In a class of thirty, three students would require the majority of the instructor's attention placing a burden on the instructor and other students who may need attention.

Essential and Helpful Items Compared to Student Abilities

To further analyze the technical skills of the students, the percentage of faculty stating that a task was either essential or helpful to achieve academic success were combined, giving a cumulative percentage of the two responses. This provides a picture of what faculty would like to see in regards to students' technical skills when they entered their classroom.

Table 3: Comparison of Faculty Essential and Helpful Expectations to Student Abilities

Task from Survey	**% of Faculty Listing Item as Essential and/or Helpful**	**% of Students Stating they could Complete the Task**
Send and Receive E-mail	100%	88%
Access Information through the Internet	98%	91%
Log into the network at PUC	95%	83%
Manipulate Multiple Windows/Programs Simultaneously	95%	65%
Search for Information on the Internet Using Search Engines	95%	84%
Send and Receive attachments/files through e-mail	95%	71%
Use Spell Check to Correct Spelling Errors	95%	93%
Copy Information from One Application to Another Application	93%	58%
Locate Files and Information Saved on a Disk	93%	82%
Create a Bookmark or Favorite to Locate a Specific Web Site Quickly	91%	72%
Properly Start and Shut-Down a PC	91%	91%
Copy a File from One Disk Drive to Another	89%	60%
Create Bulleted or Numbered Lists	89%	78%
Format a Font's size, typeface, and/or color	89%	89%
Create a Double Spaced Document	86%	72%
Create a Table	86%	71%
Demonstrate Correct Use of Alt, Ctrl, Tab, and Shift	86%	72%
Scan for Viruses using Virus Scanning Software	84%	67%
Complete and Submit Information Using an On-Line Form	84%	73%
Delete Files from a Disk	84%	73%
Create a File Folder or Sub-Directory on a Disk	82%	64%
Describe functions and use of terms	82%	68%
Switch Between Disk Drives to Locate Information	82%	65%
Download Applications/Plug-ins from the Internet	80%	60%
Rename a File that is Saved on a Disk	80%	78%
Create a Document that Contains Columns	77%	77%
Format a Disk	77%	53%
Save an Image to Disk from the Web	75%	58%
Explain the use of cc and bcc in an E-mail Message	73%	42%
Install Software and/or Plug-Ins on a Computer	70%	53%
Correctly Define Terms	59%	40%
Insert Graphics into a PowerPoint Presentation	59%	39%
Create a PowerPoint presentation	59%	40%

Create a Web Page Using HTML or a Page Generator	55%	26%
Use WinZip to compress/decompress files	55%	30%
Sort Information in a Spreadsheet	52%	45%
Add Sound and/or Video to a Presentation	50%	29%
Create a Chart in a Spreadsheet	50%	48%
Perform Calculations on Data Using Formulas and Simple Functions	50%	46%

There were 39 skills in which at least half the faculty stated they felt it would be helpful for a student to possess in order to achieve academic success in their class (See Table 3). Of these skills, 22 had less than 70% of the students stating that they would be able to complete the task. Again, only four skills had a student rating of 90% or better.

Conclusions

Based on the results presented above, it is understandable to hear faculty comment on the inability of students to perform tasks they are expected to know how to complete. This also helps support what is found in some of the literature, which states that students aren't as ready "technically" as most people assume. As institutions of higher education, we can no longer assume that students are technically prepared for courses that have a distance component included and remediation of computer technical skills might need to be a priority.

References

Center for Research on Information Technology and Organizations. (1999, October 13). Internet access up to 90% in schools, but where are the computers? *Electronic Education Report, 6*(19), 3.

Mory, E. H., Gambill, L. E., & Browning, J. B. (1998). *Instruction on the Web: The online student's perspective*. In SITE 98: Society for Information Technology & Teacher Education International Conference Proceedings.

Shearer, R. L. (2000, April 15) Accreditation of distance education (Part I). *Distance Education Report, 4,* 4-5.

Sheffield, C. J. (1996). An examination of self-reported computer literacy skills of preservice teachers. *Action in Teacher Education, 17*(4), 45 – 52.

Schuster, J. W., Collins, B. C., Hall, M. G., & Griffen, A. B. (1999). *Ten years of distance learning: Changing to meet geographical, institutional, and student characteristics.* In Rural Special Education for the New Millennium Conference Proceedings of the American Council on Rural Special Education.

Biographical Sketches

Elizabeth Osika is the Manager of Instructional Services at Purdue University Calumet. During her tenure in the position, she has worked to promote distance learning on campus. Some of her efforts include administering the campus course management software, training faculty and staff on the use of various technologies in the classroom, and organizing the campus' distance learning conference, Topics on Distance Learning.

Address: 2200 169th St.
Gyte 135
Hammond, IN 46323

Douglas Sharp is the Assistant Vice Chancellor for Information and Instructional Technology at Purdue Calumet. Dr. Sharp is an enthusiastic user and promoter of technology in teaching and learning during his five year tenure at Purdue Calumet. He initiated the acquisition of the first web based courseware system at Purdue Calumet and has been a champion of its use ever since.

Address: 2200 169th St.
Gyte 135
Hammond, IN 46323

BCIT's Management Degree: Innovative Distance Design and Delivery

Starr Owen, M.Ed., Ph.D.
Degree Coach, Management Degree,
British Columbia Institute of Technology

Sydney Scott, MBA
Program Head, Management Degree,
British Columbia Institute of Technology

BCIT's Management Degree: Innovative Distance Design and Delivery

In this paper, we briefly describe BCIT's (British Columbia Institute of Technology's) Management Degree. First, we provide an overview of the program, including the rationale for proposing it, and the movement from pilot to implementation. Second, we identify four distinctive features of the program's design and delivery:

1. The use of learning technologies (e.g., web-based materials, on-line chats, email) to facilitate interaction among on-line knowledge bases, the coach, and other learners,
2. Competency-based curriculum design,
3. The unique coaching relationship between the degree coach (BCIT faculty member) and the student, and
4. The collaborative partnership with the student, the degree coach and the workplace advisor.

For each feature, we offer some of what we have learned; we may add other comments, such as information on accomplishments or work in progress.

BCIT's Management Degree: An Overview

The rationale for proposing the Degree Program emphasized identified learning needs. Once the proposal was accepted and the initial curriculum development was completed, the Program moved to the Pilot Phase and then to full implementation.

Rationale for the Program

The Degree was designed to respond to social, corporate, and personal needs and wants. Intensified competition in the private sector, reduced resources in the public sector, and a perceived shortage of management skills in the BC business community were critical factors. Also, many adults want to gain or update managerial skills and knowledge while continuing to work full-time in supervisory or managerial careers. Their career and life demands often are inconsistent with participating in instruction offered in a fixed schedule format. BCIT responded with a competency-based, workplace-focussed management degree: an individualized, self-directed and self-paced program with technology-based (online) distance education delivery format, accessible from home or workplace.

Students apply their learning immediately and directly within their workplaces. Their programs are individually tailored to be relevant to their particular career goals, industry and organization. The assessments emphasize demonstrated capabilities in important generic management competencies. The student, degree coach (BCIT faculty member) and workplace advisor form a collaborative partnership to enhance the student-manager's skills.

From Pilot to Implementation

Once the proposal to design the Degree was approved, an intensive period of developing competency-based curriculum and assessing essential administrative procedures ensued. The Degree first was offered as a pilot program, starting January 1998, with 3 students, all BCIT employees. (They paid no tuition because they participated in the pilot.) One of these "pilot" student graduated in June, 2000; another nears completion. (The third student withdrew when the pilot was completed; she enrolled in a Master's program.) The Pilot informed the coaching role and curriculum revisions (see below), among other things.

At present, the program has 76 students (employed in profit and not-for-profit, organizations range from very small to very large size), 4.5 coaches, .5 Program Head, and 1 Program Assistant. In addition to the general Management degree, we offer a Health Care Management Speciality. In the future, we hope to offer additional specialities, with Marketing Management and E-commerce Management likely possibility. A priority is getting more efficient and effective at coaching; this will include developing a coaching model tailored to the Degree program's needs.

Features of Design and Delivery

In this section we identify four features—learning technologies, competency-based curriculum design, one-to-one coaching relationship, workplace partnership—of the program design and some of the lessons learned to date that pertain to that feature.

The Learning Technologies

The program uses web-based course materials and encourages students to communicate with one another and with the degree coach by means of on-line chats and email.

We learned: Email emerges as the primary means of communication. Chat rooms are not heavily used. Many students do not seek interaction with other students. We wonder: How much to persist with efforts to encourage learner-to-learner interaction. Whose agenda (needs, assumptions, beliefs) is served by encouraging (and continuing to encourage) learner-to-learner interaction?

Competency-Based Curriculum Design.

The program consists of eighteen courses in seven competency areas: Self Awareness; Communication and Working Relations; Leadership and Teamwork; Managing Change; Managing Human Resources, Financial Resources and Operations; Global Perspective and Organizational Regulations and Ethics; and Strategic Thinking and Implementation. Within each competency area, goals have been identified which define effective behaviours in that area. Hence, learning entails knowledge, skills and behaviours. The coach and student work together until each goal is mastered.

We learned: The Pilot showed that we were using too much material; students could attain outcomes with less preparation. Students sometimes need extensive coaching to adapt to the opportunities and challenges of Workplace Assessments. Our accomplishments include: Comprehensive generic skills management courses are up and running. Workplace based proof of competency (e.g., description of work that successfully demonstrates competency) is proving effective. Work in progress: All courses have been/will be revised in 1999-2000. We expect that curriculum monitoring and revision will be ongoing. Curriculum revisions are based on student and coach feedback.

One-on-One Coaching Relationship

Each student is assigned a coach (a BCIT faculty member) for the duration of the program. Typically, coach and student schedule weekly coaching sessions. These are scheduled to accommodate the student's work schedule and occur most often by telephone, sometimes by email or face-to-face.

We learned: The coach needs to be proactive, to provide structure, to facilitate skills of self-direction. Many adult students need assistance with becoming independent learners. Work in progress: Coach training and developing/evolving a program-specific model of coaching.

Partnership With Workplace Advisor

This is a collaborative partnership with the student, the degree coach and the workplace advisor. Students are required to attain support within their workplace before they are accepted into the program. We learned to clarify expectations. We need to minimize time demands on the advisor and to encourage students to do the same. The workplace advisor acts as cheerleader and "project finder"; the emphasis is on making opportunities available. We also need to minimize time demands on coach, so then when student is local, visits to workplace and with advisor are limited.

Recent Selected Conference Presentations of Presenters

Owen, S. L., & Scott, S. (2000, 1 May). *BCIT's Bachelor of Technology in Management Degree: Knowledge that Works.* Paper presented at the Kaleidoscope 2000 Conference:

Innovative Good Practice in Post Secondary Education at Simon Fraser University at Harbour Centre, Vancouver.

Owen, S. L. (1998, 21-24 May). *Learning partnerships: A dozen different cases.* Paper presented at the 14th Annual Canadian Association for Distance Education (CADE) Partnerships for Learning Conference at Banff, Alberta.

Owen, S. L. (1998, 31 May). *Technology-based distance delivery: The learners' perspective.* Paper presented at the Canadian Association for Studies in Adult Education (CASAE), Congress of the Social Sciences and Humanities Conference 1998, University of Ottawa, ON.

Owen, S. L. (1998, 22 April). *New technologies in Education: The adult learners' perspectives.* Paper presented at the IV International Congress of Education, Universidad de las Americas, Cholula, Puebla, Mexico.

Scott-Hallam, Sydney (1998, 24 May). *Leaving the classroom: Innovative training in the "real" world.* Paper presented at the 14th Annual Canadian Association for Distance Education (CADE) Partnerships for Learning Conference at Banff, AB.

Biographical Sketches

Starr Owen has experience in post-secondary management, curriculum design, and program delivery, and in research in innovative practices in distance education. Starr's professional experience includes designing and administering learner-centred, individualized programs for adults; she also has conducted a research project on technology-based distance delivery.

Address: 3700 Willingdon Avenue
Burnaby, BC Canada V5G 3H2
E-mail: sowen@bcit.ca
Phone: (604) 412-7511
Fax: (604) 436-0810

Sydney Scott also has experience in post-secondary management, curriculum design, and program delivery, and in research in innovative practices in distance education. Sydney's experience also includes business management. Syd is a specialist in competency-based education. She championed BCIT's Management degree while it was in proposal stage and, as Program Head, managed the pilot phase, and manages the program at present.

Working With the Virtual Student

Rena M. Palloff, Ph.D.
Crossroads Consulting Group

Keith Pratt, Ph.D.
Crossroads Consulting Group

Assumptions About Online Teaching and Learning

As academic institutions rush headlong into online distance learning, several assumptions are being made. It is assumed that if online courses and programs are offered, teachers will know how to teach in that environment and, more importantly, students will somehow know how to engage with the material or learn. Our experience has shown us that the opposite is true. Not only do faculty need training and assistance in making the transition to the online environment, but students also need to be taught how to learn online. Learning through the use of technology takes more than mastery of a software program or comfort with the hardware being used. Students in online learning situations need to come to an awareness that learning through the use of technology significantly impacts the learning process itself. Furthermore, they need to realize that the online learning process occurs through the formation of a learning community and is reflective in nature.

Students may enter an online course expecting to be educated by a content expert, just as they might in a traditional classroom. When they discover that the most profound learning in an online course is that which is generated by students interacting with one another, they may become confused and sometimes feel "cheated" by the process. Our culture has led students to believe that education happens by exposure to "the sage on the stage," as many might describe the traditional academic. In the online environment, however, the instructor acts as a facilitator, or a "guide on the side," enabling students to learn collaboratively from one another. For many students, this is a significant shift; one for which they need to be adequately prepared.

As we consider the collaborative learning process which occurs online, some questions emerge:

- What are the characteristics of the successful learner in the online environment?
- What do we need to consider in terms of the role of the learner?
- How do instructors facilitate online courses in order to maximize the potential of the online learner?
- And finally, how can instructors teach their students to effectively use the online environment for learning?

We will explore each of these questions in an attempt to provide instructors with ideas and suggestions to assist them in working more effectively with the virtual student.

The Successful Learner in the Online Classroom

Some students take to the online classroom easily and successfully. For others, it is more of a struggle. A number of students feel that the online classroom more closely supports their learning style than does the face-to-face classroom, particularly if their learning style involves needing time to think and reflect before responding to questions and ideas. Others may find that they express themselves more effectively in writing rather than verbally. For them, the online environment, because it is text-based, may be more appropriate.

There are several attributes that make a student successful online where they may not blossom in the face-to-face classroom. There are also means by which instructors can enable the emergence of these attributes. The following is a summary of both.

Successful students in distance education programs are:

- Voluntarily seeking further education
- Motivated
- Have higher expectations
- More self-disciplined
- Older than the average student
- Possess a more serious attitude toward their courses, education, and learning
- Predominantly non-traditional students, although this does not and should not exclude traditional undergraduate students particularly when we consider that few of today's students can be considered "traditional." The majority of our students today are older, are working and thus need more flexible schedules.
- Students who tend to enjoy learning for learning's sake
- Students who become energized by the ability to be set free to explore a topic with peers
- Demonstrate good thinking skills, an ability to work and do some amount of research independently, and an ability to work with a minimal amount of structure.

As the characteristics of the online learner suggest, in general distance education has been applied to and seen as most successful in the arena of adult and continuing education. However, more universities are utilizing this delivery method with all groups of students regardless of age or level of educational experience. Our own experience with younger, undergraduate students has shown us that the students in that age group who do well online are looking for additional flexibility in their busy schedules, are more independent than the average undergraduate, and may feel lost in large face-to-face classes. The online classroom allows them to express themselves in ways that the face-to-face classroom does not.

In our experience, computer-mediated distance education can successfully draw out a student who would not be considered a "noisy learner" in the traditional classroom. It can provide an educational experience which helps to motivate a student who appears unmotivated in another setting, because they are quieter than their peers and less likely to enter into a discussion in the classroom. We are also discovering, however, that the interactive skills learned in the online environment are transferrable to the face-to-face setting. In other words, once a student is acknowledged for their contributions to the class, their thinking skills, and their ability to interact, they gain confidence in their ability and tend to use these newly discovered skills in other settings.

Addressing Different Learning Styles

A number of authors, including Litzinger and Osif (1993) have attempted to catagorize the ranges of learning styles people possess. Probably the best known is Kolb (1984) who determined that there are four predominant learning styles. *Convergers* like to reach closure quickly by finding concrete solutions to problems and making decisions; *divergers* have an awareness of meaning and values and enjoy brainstorming and imagining alternative solutions; *assimilators* like to take in lots of information and build theoretical models based on that information; and *accomodators* are more action-oriented, taking risks and teaching themselves through trial and error.

Although from our description thus far, it may appear that accomodators are most suited to the online classroom environment, the reality is that all learning styles can work well there. Kolb described a cycle of learning beginning with one's own experience followed by observation and reflection on that experience, leading to the formation of abstract concepts and generalizations, which leads to the development of hypotheses to be tested in future action, leading to new experiences.

Everyone develops a learning style that has some strong and weak points. For example, a person might jump into new experiences without taking the time to reflect on the lessons to be learned from those experiences. Because all students move through this cycle in the learning process and embrace parts of it to a greater or lesser extent, all learning styles can be adequately accommodated online. The creation of learning experiences that enable students to experience all portions of the learning cycle enables them to better develop areas in which they might be weak.

To further complicate the understanding of learning styles, it has been theorized that people tend to learn predominantly through one of their senses, predominantly auditory, visual, or tactile (Barsch, 1980). Auditory learners tend to retain more of what they hear; visual learners tend to retain more of what they see or read; and tactile learners tend to retain more when they are using their sense of touch, for example when taking notes. Many articles have appeared which seem to indicate that in order to accommodate various learning styles in the online classroom, various forms of technology must be used. However, constructing an online course utilizing different types of assignments and approaches to learning can accomplish the same objective without needing to use more complex technology such as audio or video. For example, in addition to asking students to read and engage in discussion online, the use of simulations, case studies, Internet research, and collaborative group experiences help broaden the learning experience and accommodate various learning styles. Given that it is difficult for an instructor to know the learning styles of his or her students in advance, creating a course that is varied in its approach can help to motivate students and keep them involved.

Working With Those Who Do Not Succeed

Should we expect that all students will succeed in this environment? Although a student who might not be successful in the face-to-face classroom may do well online, it is unrealistic to expect that all students will do well in this environment, just as all faculty will not be able to adapt their teaching styles to fit the medium. How does an instructor determine lack of success in the online classroom? This is a more difficult question to answer when the instructor is not able to see nonverbal cues that tell him or her when a student is confused. In the online classroom, students do still provide evidence that tells us that the student may be in trouble. The following are some signs to look for:

- **Changes in levels of participation:** A student who had been participating well but who suddenly disappears from the online discussion for a week or two may be having difficulty with the course or course material or technology.
- **Difficulty getting started:** Some students will simply have difficulty getting started online. The instructor may get e-mail or phone calls from the student talking about technical or other difficulties with the course. The student may continue to express confusion with course procedures and guidelines despite explanation by the instructor.
- **Flaming:** When a student is frustrated or confused, he or she may inappropriately express these emotions by lashing out on the course site. The instructor needs to respond quickly to an outburst online just as he or she would do in the face-to-face classroom. We will return to the topic of dealing with disruptive behavior in the next chapter.
- **Dominating the discussion in inappropriate ways:** Some students will attempt to dominate the discussion, moving it to personal or other concerns that have little to do with course material. Again, as in the face-to-face classroom, the instructor should attempt to work with the student on an individual basis to re-direct this behavior.

When students do not do well online, as evidenced by any of the indicators discussed above, they should be given the option to return to the face-to-face classroom. This should not be considered a failure, but simply a poor fit or perhaps an indicator of a different learning style or preference that will not change or adapt easily. Not all students do well online and are simply in need of more structure and face-to-face contact with an instructor and other students. Once again, this approach to participation problems differs significantly from the traditional way in which these issues might be resolved. In the traditional academic setting, a student might be asked to drop a course or transfer to another section, but flexibility in moving that student to a completely different learning environment simply does not exist. Consequently, the online environment does provide the instructor with a new means by which to assess student capability, learning preferences, and performance.

Teaching Students to Learn in the Online Environment

Students are, for the most part, unaware of the demands placed on them as learners by opting to learn online. They may enter a nontraditional approach to learning with traditional expectations, i.e., that the instructor will "teach" and they will "learn" from the material provided. They do not understand why the instructor is less visible in the learning process and that the instructor role is one of facilitator rather than traditional teacher. They do not understand that the learning process is less structured and demands significantly more input from the learners to make it successful. All of these issues must somehow be conveyed to students prior to embarking on an online course. As with face-to-face classes, instructors may encounter "difficult" students in the online classroom. Many times difficulties emerge when differing sets of expectations are held and no attempt is made to clarify.

Some institutions, such as Pennsylvania State University, are creating online courses to teach students about online learning. Some are mandating that students complete the online introduction before embarking on other online classes. Others are incorporating mandatory face-to-face orientations to online programs and courses. Regardless of the approach used, the idea is the same: ***we cannot assume that learners will automatically understand the new approach to teaching and learning that IS the online classroom.*** In order to maximize the educational potential the online classroom holds and to ensure that the learners therein are given the best chance of becoming "noisy learners," we must pay attention to teaching our teachers how to teach and our learners how to learn when teaching and learning are virtual.

As with faculty training, conducting student training online allows them to experience online learning before they take an actual course. Regardless of the means by which the training is conducted, the following should be included in a student orientation to online learning:

- The basics of logging on to the Internet, including the use of a browser, accessing the course site, saving and printing material found online, basic Internet searching, and e-mail.
- Understanding what it means to be an online distant learner and what is required to do so successfully, including time requirements and time management.
- The differences between a face-to-face and an online course, including the role of the instructor and the roles of students, as well as expectations about how students will be evaluated.
- Interaction between the instructor and student and between students.
- How to give feedback.
- Appropriate interaction and communication, including the rules of "netiquette."
- How and where to get help when it is needed.

Providing an online orientation course may not resolve all of the issues for students as they make the transition to the online classroom. But it certainly can help to give them a leg up and a clearer understanding of the differences in the type of educational experience they are about to undertake.

References

Barsch, J. *Barsch learning style inventory.* Available:
http://hcc.hawaii.edu/intranet...vCom/guidebook/teachtip/learnstyl.htm

Kolb, D. (1985). *Learning style inventory*. Boston: McBerr.

Litzinger, M., & Osif, B. (1993). Accommodating diverse learning styles: Designing instruction for electronic information sources. In Shirato, L. (Ed.). *What is good instruction now? Library instruction for the 90s.* Ann Arbor, MI: Pierian Press.

Nipper, S. (1989). Third generation distance learning and computer conferencing. *Mindweave.* Available: http://www-icdl.open.ac.uk/mindweave/chap5.html

Biographical Sketches

Rena Palloff, Ph.D. and **Keith Pratt, Ph.D.** are the managing partners of Crossroads Consulting Group and the authors of the Frandson Award winning book, *Building Learning Communities in Cyberspace: Effective Strategies for the Online Classroom (Jossey-Bass, 1999).* Written for faculty, trainers, faculty developers, and administrators of distance learning programs, *Building Learning Communities in Cyberspace* is a comprehensive guide to the development of an online environment that helps promote successful learning outcomes while building and fostering a sense of community among the learners. The book is based on our many years of teaching experience in the online environment and contains vignettes and case examples from a variety of successful online courses. Drs. Palloff and Pratt have been presenting this work across the United States and internationally since 1994 as well as consulting to academic institutions regarding the development of effective distance learning programs. In addition to their consulting work, Dr. Palloff is on the faculty of the Fielding Institute, teaching in their online masters degree program in Organizational Design and Effectiveness. Dr. Pratt is a Senior Project Manager for Datatel overseeing software implementations in community colleges on the West Coast.

Address: Crossroads Consulting Group
206 Lagunaria Lane
Alameda, CA 94502
E-mail: rpalloff@mindspring.com
drkpratt@mindspring.com
URL: www.xroadsgroup.com
Phone: (510) 769-1340
Fax: (510) 769-1340

Advanced Distributed Learning in the Department of Defense

Michael A. Parmentier
Director of Readiness and Training
Office of the Under Secretary of Defense (Readiness)

J. Dexter Fletcher, Ph.D.
Institute for Defense Analysis

Paul J. Jesukiewicz, Manager
ADL Collaboration Laboratory

Philip V. Dodds
Random House Associates

Since 1997, the Secretary of Defense has employed a special team to modernize education, training and use of performance aids in the Department of Defense. The Secretary's vision statement is "anytime/anywhere" access to quality learning. This vision has been backed up by Presidential Executive Order 13111 (January 1999) that directs the Department to lead the rest of the Federal work force in bringing technology to bear on federal training and education. In the 1999 defense appropriation Bill, Congress directed the Secretary to prepare plans to achieve modernization of education and training through application of technology.

What drives the Secretary's vision and the guidance the Department has received from both the Executive and Legislative Branches of government is the complexity of operations and the numbers of deployments US Forces have made since the end of the Cold War. Maintaining the readiness of forces in these complex, highly dynamic deployments was first recognized in 1996 as a crucial dimension in Department planning during the first Quadrennial Defense Review.

Since then, the Defense Science Board and other blue-ribbon panels have similarly concluded that the pace of change demands new methods of education and training to support "just-in-time" learning. The strategy includes exploiting existing network-based technologies, creating platform-neutral, reusable courseware and content to lower costs. It also includes promoting widespread collaboration to satisfy common needs, enhancing performance with emerging and next-generation learning technologies, developing a common framework that drives commercial off the shelf product cycles, and establishing a coordinated implementation process.

From the vision a strategy has been devised to provide access to the highest quality education and training, tailored to individual needs, and delivered cost effectively, anywhere and anytime.

Learning is key. Learning is defined to include education, training and performance aids, like simulations. Formerly in the Department, as in many other traditional settings, training was divorced from education. Today they are seen as complimentary, even synergistic. Formerly, education and training in the Department was seen as a step-wise process between intervening field assignments. Today, it is seen more as a continuous environment of self-improvement and readiness enhancement.

Distributed learning differs from traditional distance learning. Whereas both are highly structured, distributed learning takes place anytime and anywhere it is needed, while maintaining its highly technical support component. Today, web-based learning, especially web-based learning that is rich in multi-media content and intelligent tutoring is the most readily identifiable form of distributed learning.

The learner is the center of the Department's strategy. Our Service members and civilian workers must be able to access learning from a variety of Departmental, civil and commercial sources. In our complex, multi-tasking environment, learning must support the individual's availability and need anywhere and anytime.

Functional requirements to support the shift to Advanced Distributed Learning in the Department include making learning accessible even from remote locations, interoperable, using instructional components developed in one location with one set of tools or platform in another location with a different set of tools or platform.

Learning must be adaptable, tailored to individual and situational needs. It must be reusable, incorporating instructional components into multiple applications. It must be durable, so that instructional components remain operable without redesign or recoding when base technology changes. Finally, software and content must be affordable, increasing learning effectiveness significantly while reducing time and costs.

The Advanced Distributed Learning Initiative achieves these functional goals by collaborating broadly to find common solutions to common problems, using emerging and next-generation communications and learning technologies that are based on common standards and guidelines.

The goal is to move the achievement of traditional classroom-based learning closer to the model of tutored students as analyzed and reported by Bloom.[1] Studies assembled by Dr. Dexter Fletcher of the Institute for Defense Analysis suggest that the use of technology-based instruction may reduce the cost of instruction by about one-third. At the same time, the data suggests that either the time of instruction may be reduced by about one-third, or the effectiveness of instruction may be increased by one-third. Either way, the potential results make a compelling case for significantly increased operational effectiveness in the Department.

Today, the Department has prepared and sent to Congress a Strategic and an Implementation Plan for Advanced Distributed Learning (ADL). Under Department leadership, a Specification for Sharable Courseware Object Reference Model (SCORM) has been coordinated with the IMS, AICC and IEEE and published for general use.

---

[1] Bloom, B.S., (1984). "The Two-Sigma Problem: The Search for Methods of Group Instruction as Effective As One-to-One Tutoring." *Educational Researcher*.

As significant as the SCORM is, it is less about technical standards than it is about building consensus, acting as a catalyst, forging alliances and accelerating the pace of technology adoption for learning anywhere and anytime. Consensus has come from among the numerous users, developers and industry vendors of courseware authoring and learning management systems. The result has been "enlightened self-interest" achieved as a common goal among participants.

SCORM 1.0, the initial set, is available on the web at <www.adlnet.org>. It is a reference model that defines a web-based learning content model. Moreover, it is a set of interrelated specifications designed to meet performance goals. It is also a process to knot together disparate groups and interests. And it is a bridge from general emerging technologies to commercial implementations.

Issues remain. We still cannot move a course from one learning management system to another. We can't reuse content "chunks" across different learning management systems. And we can't create searchable content or media repositories across different learning management system environments. These issues are the focus of continuing efforts toward the creation this year of an improved SCORM 2.0

An XML-based course structure format is under discussion as a means of moving courses from one learning management system to another. Run time environments are under discussion in term of common communications between content and the learning management system. Finally, the application of metadata to courses, content chunks and raw media elements is under discussion as the vehicle for creating searchable libraries and repositories.

It is now possible to begin designing content with reuse in mind. Designing content in small logical modules is preferred and encouraged. Continuous monitoring of evolving standards is recommended. Requiring standards-based products from vendors is highly recommended. Developing an organizational strategy for adopting distributed learning that matches institutional core competencies is recommended. Aiding the process is the Collaboration Laboratory or "Co-Lab."

A Co-Lab has been established at the Institute for Defense Analysis in Alexandria, Virginia to test software products for SCORM compliance and to continue improving the SCORM itself. Co-Lab nodes have also been established with the Wisconsin University System and the Naval Air Weapons Center, Technical Systems Division on the Campus of the University of Central Florida in Orlando. Together these Co-Labs furnish sites for real and virtual collaboration on courseware authoring, building, and archiving, as well as learning management systems, repositories.

The Co-Lab is established for four purposes. The first purpose is to cooperate with industry and academia to develop common guidelines for advanced distribute learning. The second is to perform technical evaluations of advanced distributed learning tools and prototypes. The third is to perform content and training effectiveness evaluations of advanced distributed learning tools and prototypes, and finally, to facilitate collaborative partnerships and resource sharing among all stakeholders.

The concept of operations of the Co-Lab is to assemble a core technical team in the distributed host facilities to assist industry, academic and other teams discuss issues, collaborate on solutions, build and test prototypes, and facilitate resource sharing. Product test support is furnished by the Concurrent Testing Corporation under contract. Costs for Co-Lab projects, over and above basic facility equipment, are born by participants.

The initial set of Co-Lab Projects includes, the SCORM, CORM compliance testing, content architecture and interoperable learning management systems. Additional initial projects underway include courses for developers, "First Responder" training sets and the Federal Learning Exchange (co-hosted with the Department of Labor), and numerous others.

This has been an in-progress review of the Advanced Distributed Learning Initiative of the Department of Defense and it many partners in the public and private sectors who have come together to craft a new environment for learning. It is an open collaboration with all comers. The beneficiaries of this broad initiative are learners everywhere.

Biographical Sketches

Michael A. Parmentier is the Director of Readiness and Training in the Office of the Secretary of Defense. He advises the Secretary on all policies, programs, and budgets for the Department's education and training activities (individual, collective, and joint training). His current focus is on accelerating the development and application of learning technologies, large-scale use of simulations, and opportunities to streamline DoD's training infrastructure (bases, ranges, schoolhouses). He has chaired or led numerous activities for a broad range of major studies and commissions addressing readiness and training. Mike also has held managerial, analytical, and technical positions in OSD Program Analysis and Evaluation, in Air Force Studies and Analyses, and at the RAND Corporation.

J. Dexter Fletcher, Ph.D. is a research staff member at the Institute for Defense Analysis where he specializes in manpower, personnel, and training issues. For the past several years he has assisted the White House Office of Science and Technology Policy and the National Science and Technology Council in developing national, cross-agency plans and programs for education and training. Dr Fletcher holds graduate degrees in computer science and educational psychology from Stanford University, where, as a post-doctoral research associate, he directed research projects for the Institute for Mathematical Studies in the Social Sciences. Dr Fletcher has held academic positions in psychology, educational psychology, computer science, and systems engineering. He has worked as a research psychologist for the Navy Personnel Research and Development Center, the Army Research Institute, and the Defense Advanced Research Projects Agency. He has designed computer-based instruction programs that are being used in public schools and training devices that are being used in military training.

Paul J. Jesukiewicz is the Director of the Advanced Distributed Learning (ADL) Co-Laboratory. Paul participates in developing distributed learning standards and guidelines for the White House, DoD, Federal Agencies, academia, and private industry; provides technical evaluation of ADL tools and prototypes; performs learning effectiveness evaluations of ADL prototypes; fosters ADL partnerships and sharing of resources; coordinates and disseminates information, know-how, and lessons learned; conducts tutorials and demonstrations on ADL technologies; and support OSD and the Services with development of policy and procedures relating to development, delivery, and management of ADL. Paul is currently working on a Ph.D. in Instructional Technology at George Mason University.

Philip V. M. Dodds is a Project Analyst with Randall House Associates, Inc., and Adjunct staff member of the Institute for Defense Analyses, Philip V. W. Dodds is the Technical Lead of the DoD's Advanced Distributed Learning Initiative. Philip was president and CEO of the Interactive Multimedia Association (IMA) from 1992 until May 1997 when IMA transferred its membership and projects to the Software Publishers Association (SPA). As such he was instrumental in projects ranging from intellectual property protection to the establishment of industry standards, and its initiatives to reduce barriers to the widespread use of interactive multimedia technologies. Mr. Dodds has a strong background in engineering and digital music and is the editor of *The Digital Multimedia Cross-Industry Guide*, published by Focal Press.

Address for all presenters:
DUSD(R)/R&T,PP
The Pentagon, Room 1C757
Washington, DC 20301-4000

Establishing the Scholarship of Teaching in On-line Courses

Mitchell J. Robertson, Ph.D.
Associate Professor of Chemistry*
Southeastern Louisiana University

Linda L. Munchausen, Ph.D.
Professor of Chemistry and Department Head
Department of Chemistry and Physics
Southeastern Louisiana University

Introduction

Most faculty evaluation is based on three broad areas: teaching effectiveness, professional and scholarly activity, and service. Even though on-line courses are becoming increasingly popular in academia, evaluation policies for faculty who create, initiate, and teach on-line courses are either non-existent or only in the formative stages at most colleges and universities. As implementing and teaching a successful on-line course requires a tremendous amount of time, faculty who implement and teach on-line courses often must sacrifice time and resources they would normally spend on those other pursuits which are commonly considered scholarly activity (Lin, 1999). This shift of priority and time can cause risk for faculty in merit, tenure, and promotion decisions. There is a respected body of literature that examines and proposes how professional and scholarly activity can be established in teaching. The literature identifies and explains criteria that can be considered, and many of these criteria are inherent in the development and teaching of on-line courses. Thus, if initiated and administered properly, the development and teaching of on-line courses can be considered comparable and equivalent to other traditional scholarly pursuits. In order for this to occur, however, evaluation policies must be framed to consider non-traditional avenues of professional and scholarly activity, including the creation and implementation of on-line courses and on-line teaching.

Scholarship of Teaching in On-line Courses

Professional and scholarly activity is inherent in the planning and successful implementation of on-line courses. In the book *Scholarship Reconsidered* (E. L. Boyer) and *Scholarship Assessed: Evaluation of the Professoriate* (C. E. Glassick, M. T. Huber, G. I. Maeroff) the authors set forth criteria for redefining scholarship in broader terms. They assert that scholarship is composed of four overlapping dimensions: the scholarships of discovery (the traditional definition of "research"), the scholarship of integration (making connections across disciplines), the scholarship of application (applying knowledge to consequential problems), and the scholarship of teaching. These authors contend that scholarship in any of these four dimensions involves six commonalities. So, the scholarship of teaching can be defined by the same commonalities generally applied to traditional research. These commonalities are examined below as they pertain to the development and initiation of an on-line course.

---

* pending final approval by the Board of Supervisors of the University of Louisiana System

1) Are there clear goals? Several goals should be inherent in the development and implementation of any on-line course. One goal is simply to successfully implement the course. (As generating the course materials involves pulling together one's knowledge of the discipline and one's knowledge of the necessary technology and applying them to the course, implementation clearly also involves the scholarship of integration and the scholarship of application.) Another inherent goal is to devise fair and effective ways to assess students in the course. Other goals could be to investigate and identify advantages and disadvantages to student learning in an on-line course, to evaluate the demographics of students enrolled in the course, *etc.* Some of these latter goals are clearly defined by the scholarship of discovery.

2) Is there adequate preparation? For an on-line course to be successful, much, if not all, of the course material is prepared ahead of time. The information sheet and syllabi which are provided to students at the very beginning of the class stand as evidence of this preparation.

3) Does the work employ appropriate methods? Appropriate methods of teaching and research in an on-line course can be judged in many ways. First, the course materials (lectures, lessons, exercises, projects, exams, etc.) should support the instructors contention that sound pedagogical principles are used in the design of the course. In addition, one can look at student evaluations and student performance in the course to argue that successful (and therefore appropriate) methods were employed, and one can submit the work to peer review.

4) Are there significant results or the potential for significant results? While successful implementation of the course is a significant result in itself, other examples of significant results are that students successfully complete the course and that the course continues to appeal to students when offered in successive semesters. Other examples of significant results could fit into the scholarship of discovery. For example, if one is studying the effectiveness of a particular method of presenting the course material and later disseminates this information in a presentation at a professional meeting or a publication, significant results have been anticipated and acknowledged.

5) Is there an effective presentation? An effective presentation is one in which student learning is at least as efficient as in the traditional classroom course. Common measures of efficiency are such variables as drop rate, grade distribution, performance on standardized tests or other measures of learned skills, as well as the eagerness of students to schedule the class in subsequent semesters.

6) Does the author reflect on his work, seek the opinions of others, and learn from this process so that improvements can be made? Ideally, all courses are dynamic and are a continual work-in-progress. If the on-line course is offered more than once, a simple comparison of the courses offered at different times will give evidence of reflection. In addition, any review of the on-line course, be it by students, peers, or supervisors, meets this criteria. Obviously, any presentations or publications about the on-line course, whether at a departmental faculty workshop, at a national meeting, in a college newsletter, or in a reviewed publication supports the idea that reflection on and review of the work has been performed.

In addition to the six commonalities inherent in all scholarship, the authors note that scholarly activity can be defined as having "... the courage to risk disapproval in the name of candor" and the willingness to "...take on difficult or unpopular work that others avoid, transcending traditional ideas, rules, and patterns, and imagining new questions and problems." (C. E. Glassick, M. T. Huber, G. I. Maeroff). These statements accurately describe the process that many instructors go through and encounter when initiating an on-line course. Developing and initiating the course requires an immense amount of time. Instructors can face skepticism about the success of the course from students, peers, and supervisors alike and may have to overcome administrative and academic barriers to show that the on-line course is worthy.

Establishing the Scholarship of Teaching for Evaluation

The following list provides elements that helped to establish the scholarship of teaching in on-line courses:

- Portfolio about the on-line course
  The portfolio can give an overview about every aspect of work related to the course. It can also be used to show that work on the course is dynamic and adapts to student/instructor reactions and student/instructor needs. This portfolio should encourage reviewers to visit an on-line site where course materials are archived and can be evaluated.
- Evidence of integration or adaptation of traditional elements of pedagogy
  Even though most instructors are very familiar with traditional teaching methods, using these traditional methods in an on-line course can be very different than in a traditional lecture setting; therefore, one should not hesitate to include this information in any evaluation of an on-line course.
- Utilization of new elements of pedagogy
  Any aspect of the course that is not part of a traditional class should be highlighted.
- Innovation
  One should consider if the on-line class is new to the department, college, or university, or if it is new to the field of study. Any new methods, new exercises, new assessment strategies, and so on that are employed in the course should be emphasized.
- Student, Peer, and Supervisor Evaluations
  Most universities employ some form of instrument designed to determine the Student's Opinion (Evaluation) of Teaching (SOT). The results of this assessment are collected each semester and can be statistically compared to the comparable traditional

classes. The SOT for an on-line course should also contain some questions regarding the students perception of the method of delivery and it's effectiveness. Course materials and the results of student evaluations are standard components of both the annual faculty review and the interim pre-tenure review. Both of these processes involve both peer review by departmental colleagues and by the Department Head and Dean.

- External Reviews (or reviews from outside department or college)
  In the event that there is minimal experience in distance teaching and learning within the budget unit, the instructor and Department Head may solicit an external review of the material by faculty from other institutions. Effective reviewers are those who are well versed in distance learning and teaching, as evidenced by their participation in conferences, by publications and presentations in distance learning, and by service on university committees whose focus is distance learning. Reviewers may also be selected from schools with similar student populations and cultures or from the "flagship" university of the state.
- Presentations (professional activity)
  As many schools demand publication as a criteria for promotion and tenure, this is a pivotal component of establishing the scholarship of on-line courses. Publications that are refereed and in a prestigious journal with broad reader demographics make a stronger case for scholarship. Publications in electronic journals are less useful as they engender the same skepticism as distance teaching and learning.
- Consulting (serve on panels, workshops, etc.)
  An instructor who is invited to serve on a panel or to present a workshop in distance education has evidence that his/her work has been favorably evaluated by peers.

Example Plan of Action

The following paragraphs provide a summary of the materials that Dr. Robertson prepared for his tenure and promotion documents to demonstrate that the scholarship of teaching was established in his on-line chemistry courses.

Since distance learning via on-line courses is an emerging field, and since most faculty and administrators at Southeastern Louisiana University have limited or no experience and knowledge in this area, Dr. Robertson's department head deemed it crucial to seek an external review from experts in the field. In addition, she sought a detailed written evaluation of the courses from several students. After consulting with Dr. Robertson, the department head contacted and secured three outside reviewers for the on-line courses. All of the reviewers possess extensive experience in the field of on-line teaching, learning, and evaluation. Two were from the major institution of higher education in the state of Louisiana, and one was an out-of-state reviewer with an extensive record of scholarship in distance education.

Dr. Robertson compiled a well organized portfolio on each on-line course for submission to both the external reviewers and all internal reviewers involved in the tenure and promotion decision. The portfolio began with a detailed table of contents and included the following information, some of it in narrative form: course index page from the WWW, course description from university catalog, history of the on-line course, description of course preparation, student profiles, registration and enrollment statistics, course grades, student evaluations, and comparisons to traditional courses. In addition, the portfolio also contained explicit instructions on how to access the on-line classroom and all course materials on the Internet. Another critical ingredient of the portfolio was a narrative explanation of Dr. Robertson's current projects in on-line teaching and pedagogy, as well as a summary of professional activity related to these on-line classes.

A project that Dr. Robertson has initiated regarding his on-line courses and titled "Effectiveness and Perception of On-line Pedagogy" is summarized below. Details of this project and one other were included in the portfolio.

Project: Effectiveness and Perception of On-line Pedagogy

Students and colleagues often query whether the learning experience in an on-line course is comparable to the learning experience attained in a traditional lecture setting. Analysis of course grades and student evaluations in the courses is one way to examine the question. However, differences such as presentation, enrollment, opportunity for interaction, assessment activities, and others between the courses can make this comparison somewhat skewed.

Dr. Robertson began a study involving a course taught in a traditional method and a course taught on-line by teaching two sections of the course—one in a traditional lecture setting and one on-line —using the same content, same textbook, similar assessment instruments, and drawing from the same body of students. Both courses met one night a week for the same period of time. He plans to continue this comparison of classes for several semesters. The ultimate goal is to refer to the data collected from these courses (grades, student evaluations, attitudes, demographics, etc...) to derive a more fair comparison between traditional and on-line methods of course delivery.

References

Lin, E. http://www.geocities.com/ResearchTriangle/Thinktank/8900/results.html (results of survey of instructors of on-line courses)

Boyer, E. L. (1990). *Scholarship revisited: Priorities of the professoriate.*, Ewing, NJ: The Carnegie Foundation for the Advancement of Teaching, California/Princeton Fulfillment Services.

Glassick, C. E. , Huber, M. T., & Maeroff, G. I. (1997). *Scholarship assessed: Evaluation of the professoriate.* San Francisco: Jossey-Bass.

Biographical Sketches

Mitchell J. Robertson is anticipating final approval for tenure and promotion to Associate Professor of Chemistry at Southeastern Louisiana University. He holds a Ph.D. in Inorganic Chemistry from Iowa State University and has twice served as a Summer Faculty Research Fellow at NASA's John C. Stennis Space Center. He has been a trailblazer at Southeastern by developing and delivering one of the university's first on-line courses and the only synchronous on-line courses. He has successfully taught several chemistry courses on-line for 3 years and has presented information about his on-line courses in the Chemical Education Division at the 215th,217th, and 219th American Chemical Society National Meetings.

Address: Department of Chemistry and Physics
SLU Box 10878
Hammond, LA 70402
E-mail: mrobertson@selu.edu
URL: www.chem.selu.edu/mitch/mitch.htm
Phone: (504) 549-3939
Fax: (504) 549-5126

Linda Lou Munchausen is a Professor of Chemistry and has served as Department Head of the Department of Chemistry in Physics for 5 years. She has over 25 years teaching experience at the university level and served for over 15 years in the Faculty Senate before becoming a Department Head. She has been involved in traditional chemistry research at Oak Ridge National Laboratories, Louisiana State University, and the United States Department of Agriculture, Agricultural Research Services, as well as Southeastern Louisiana University.

Address: Department of Chemistry and Physics
SLU Box 10878
Hammond, LA 70402
E-mail: lmunchausen@selu.edu
URL: www.chem.selu.edu/faculty/munchau.htm
Phone: (504) 549-2159
Fax: (504) 549-5126

Information About Distance Education:
Finding What You Need, Quickly and Painlessly!

Farhad Saba, Ph.D., Editor
Distance Education Report

Dramatic Growth of Distance Education

A Growing "Haystack"

Distance education has exploded in the past five years, and has engaged many practitioners and educators within the field. The literature of distance education is varied, and highly distributed. It is not unusual to see articles about distance education in unlikely places such as in flight magazines aboard an aircraft discussing, for example, the effect of videoconferencing on the travel business! In recent years, thousands of websites have emerged. Local newspapers have dramatically increased their coverage of distance education in a variety of articles ranging form testimonials by students to interviews with administrators, and distance educators.

Practitioner-oriented journals and magazines cover distance education topics from various perspectives. From nursing continuing education journals, to journals directed to attorneys, and accountants carry articles about our field.

Yet, despite a dramatic increase in sources, and types of information available, it is very difficult to pinpoint the specific information you need. This session will make order out of the current chaos and will guide participants to find the proverbial needle in the haystack.

Size of Distance Education Today

In the last few months, institutions of higher education, and the private sector have poured billions of dollars into distance education. Eduventures.com, a Boston-based research firm reported that in the last two years, the total private sector investment in education, as well as the share of "e-education" in the total investment have both increased. In 1998, 25 percent of the $793 million invested in education by the private sector as a whole went to distance education. In 1999, the rate increased to 38 percent of the total of $2.5 billion. In the first quarter of 2000, investment has already risen to 64 percent of the total outlay, which is now about $1 billion!

Total investment in distance education in the public sector is difficult to ascertain, given the size, and complexity of higher education in the US. However, the public sector has also invested billions of dollars in distance education with state funds, and grants from the federal government, as well as from the private sector. Recently, the US Department of Education reported that in academic year 1994-95, an estimated 25,730 distance education courses with different catalog numbers were offered by higher education institutions. Given the rapid growth of the field in the last five years, the number of courses must easily exceed four times that of what was offered in 94-95. The exact amount of investment, in any case, is not important for the sake of this discussion. It is sufficient to say that, like the private sector, public sector investment has also been very large --in billions of dollars.

Growing Distance Education Resources

No one can accurately guess the size of distance education literature, but some indicators point towards its rapid growth. For example, since the proposal for this presentation was written a few months ago, at least three online journals, one new print publication, at least 10 new book titles, 7 ERIC digests, and numerous websites have emerged. In addition, publications such as the Chronicle of Higher Education run daily articles about the field, and as if though that was not enough, they have started hosting online discussions, featuring prominent educators. The transcripts of these discussions are posted on websites adding to the growing amount of information. Even daily newspapers, such the New York Times, The Washington Post, and the Christian Science Monitor run daily articles about teaching and learning at a distance, or stories related to them. The Washington Post has a section dedicated to distance education in their online version.

Categorizing the Information

In searching for news and information about distance education, I have found nine categories of information, which provide a good overall view of the literature base in the field. These are:

- Higher education news sources, including university and college press releases
- Company press releases
- Policy reports, committee reports, legislative reports, and other government sources
- Expository description of ongoing programs and projects
- Data based description of programs and projects
- Theoretical literature of the field
- Databased, theory-driven literature
- Databased atheoretical literature, and
- Online databases, and websites such as UW-Madison's Distance Education Clearinghouse, distance-educator.com, ERIC, etc.

How to Gain Access to This Information and Keep Informed

Sources of information range from detailed and specific to general and comprehensive. I will provide a brief characterization of each of these types of sources, so you can find the information you need faster, depending on your need and application.

Daily Press Releases and Email News

At the basic level, there are daily email news services, which you can subscribe to by going to the site of universities, such as Penn State, or companies such as Cisco. They will provide you with a daily barrage of information, which is good news, but needs sorting out, and classifying.

Daily Email News

Newspapers, magazines and other publications also provide daily email news sent to your desktop. For example, I receive daily email from the Chronicle of Higher Education, as well as the Christian Science Monitor, and host other online technology news services, such as http://www.idg.net, http://www.cnet.com/, http://www.webreference.com among many others.

Search Engines

News on The Web. Search engines provide a higher level of refinement in finding information about distance education. Some, such as Yahoo! have daily personalized email news service, which is very useful, since you can key in your search terms. A list of article titles, and their URL from a variety of sources is sent to you on a daily basis via email.

The entire Web. Search engines also provide the means to find multitudes of documents on servers around the world. But not all search engines are the same, and not each search engine remains the same over time. In the fierce competition for market share, they improve on their technology from time to time, which has proven to be beneficial to the user so far. For example, the current favorite search engine of mine is http://www.northernlight.com, which has provided me with narrower and more pinpointed searches than the other currently available engines on the web.

Scholarly Publications

The American Journal of Distance Education, and its related listservs DEOS, and DEOS News are the prime sources of theory and research in the US. Also, published in the US is the *International Journal of Educational Telecommunications*, and The *Journal of Library Services for Distance Education*. Recently, the *Quarterly Review of Distance Education* has also been added to the list of scholarly publications in the US. *Open Learning*, The Canadian journal *Distance Education*, and the Australian journal *Distance Education* are leading academic publications outside of the US. By the time this paper is released *International Review of Research in Open and Distance Learning* should also have been published by Athabasca University.

Magazines

A growing number of Magazines, such as Inside Technology Training and eLearning are devoting their pages exclusively to distance education. Other publications, such as Training, Syllabus, and Educational Technology have increased their coverage of distance education tremendously.

US Department of Education

The ERIC collection. I suppose everyone in this audience is familiar with various online and other services of Educational Resources Information Center. The collection boasts 1 million documents now, which is an indicative of the comprehensiveness of its databases.

National Center for Education Statistics (NCES). The National Center for Education Statistics provides timely and topical statistical analysis of information related to education. It has shown more interest in distance education in recent years. For example, this year the Center published a study about the growth of the field in higher education between 1995, and 1997.

Newsletters

Distance Education Report (DER) is a bi-weekly newsletter that I edit, and Magna publications, which happen to be in Madison, WI publishes. DER, however, is not the only publication of this kind. I have to share the limelight in editing a newsletter with Dr. George Connick, who also publishes a monthly newsletter about distance education. Several newsletters have also emerged which are sent to subscribers who sign up for them. Distance-educaotr.com, for instance, posts daily news from a variety of sources, such as newspapers, press releases, and magazines. You can sign up for an email version of the news on the website. Distance Education Gazette, On line Learning, and Need to Know are other email newsletters.

Information Portals

References related to this paper presentation, as well as many other resources are located on distance-educator.com a comprehensive portal, which is designed for professional educators. UW-Madison, also maintains Distance Education Clearinghouse, a portal on the web, which is also very comprehensive, and I recommend it highly.

Reference

Links and other references mentioned in this paper presentation are at http://www.distance-educator.com

Biographical Sketch

Dr. Saba has managed large-scale distance education systems, and practiced in the field as a professor, and a researcher in the past 30 years. He is the recipient of the Charles A. Wedemeyer Award, and frequent contributor of theory-driven, data-based research articles to scholarly journals in the field. He edits Distance Education Report, a bi-monthly newsletter directed to higher education administrators, and its companion online portal distance-educator.com.

Address: 68639 Caminito Montanoso
San Diego, CA 92119
E-mail: saba@Distance-Educactor.com
URL: http://www.distance-educator.com
Phone: (619) 461-0370
Fax: (619) 461-0625

Support Services for Online and Distance Education Programs

Dr. David Sachs
Assistant Dean
Pace University

Pace University, in collaboration with CAEL (The Council for Adult and Experiential Learning) and the NACTEL partners (Bell Atlantic, CWA (Communications Workers of America), GTE, IBEW (International Brotherhood of Electrical Workers of America), SBC and US WEST), has developed an Associates Degree in Telecommunications that is being taught to company and union members throughout the United States. Development work on this NACTEL Project began in Fall 1998, and five pilot courses were taught to 100 students in Spring 1999, prior to FIPSE funding. From January 1, 1999 until August 31, 2000, 630 unique individuals will have participated in one or more courses provided by Pace University for the NACTEL project. Students live in 37 different states, including Hawaii and Alaska, and range in age from 20 – 55. The average age of a NACTEL student is 38 years old. All of the current students are employed by one of the NACTEL partner companies or they are an IBEW or CWA member.

Pace University was one of twenty-nine universities that was awarded FIPSE funding as part of the LAAP (Learning Anytime Anywhere Partnerships) program in 1999. For more information about the LAAP program, see: http://www.ed.gov/offices/OPE/FIPSE/learning.html FIPSE funding awarded in August 1999 provides resources for work in three areas: enhanced student support services, enhanced mentoring, and secure online testing. Work in the area of **enhanced student support services** focuses on how to improve all aspects of the support services that are provided to online students. This support encompasses all aspects of student contact with the University, including their:

- Initial encounter with the NACTEL Web site (http://www.nactel.org);
- Initial encounter with the Pace University/NACTEL Web site (http://csis.pace.edu/nactel);
- movement through the online application, assessment, advisement and registration processes;
- Ability to obtain quickly and easily information about the financial support that is provided by each student's particular company or union;
- Ability to obtain course books and materials quickly and easily;
- Ability to know in a timely fashion the courses for which they are registered and the requirements of the course or courses;
- Ability to obtain information about University rules, regulations and policies (adding courses, dropping courses, transferring credits) quickly and easily;
- Ability to communicate quickly and easily with Pace University faculty and staff;
- Ability to learn well and effectively from home, online, without feeling isolated or alone in the process;

- Ability to complete the courses, certificates or the degree in a timely and supportive fashion.

Enhanced student support services will eventually encompass the entire relationship that students have with the NACTEL partnership and Pace University from their initial moment of contact until their final completion of a certificate or degree. Students need to feel well cared for, and well supported in a timely and informative fashion. Recent corroboration for the importance of enhanced student support services is provided by an article in the May 2000 issue of *Syllabus* entitled "Going the Extra Mile: Serving Distance Education Students with Resources and Services". In this article, Elizabeth Buchanan suggests additional library, administrative, and faculty support strategies to make distance students feel at home online.

Two women with a strong marketing background are attending to the objective of enhanced student support services. Pauline Waller and Anne Guthrie bring many years of corporate experience and marketing training to this objective. Both are familiar with how to survey clients and how to translate that information into action. Both Pauline and Anne have spent considerable time since October 1999 developing *online questionnaires* and surveys for the NACTEL students. They have worked closely with IOTA Solutions to develop questions for the surveys, and to analyze the information that is obtained. These surveys, and some of their responses, may be found at: http://www.iotasolutions.com/fipse/

In addition, Pauline and Anne have conducted many *phone interviews*. Anne has interviewed approximately 45 students by phone about the program, the Web site, and their progress during the past few months. All of the information has been analyzed and then translated into action plans. Primary work being done in this first year is focusing substantially on revising the Pace University/NACTEL (http://csis.pace.edu/nactel) Web site. Revision of this Web site will be complete by August 1, 2000.

Another form of enhanced student support services has been the inclusion of *tutoring services* for online math students. Smarthinking, a company that provides online, real-time academic support for higher education students taking math courses, has provided this. Smarthinking tutors have provided math tutoring, on a pilot basis for NACTEL students, and approximately 20 of our students have used their support. While not all students have availed themselves of the Smarthinking tutorial services, those who have done so are clear and eloquent about the value that online math tutoring affords. Several students have stated clearly and unequivocally that without such support, they would never have been able to succeed in an online math course. Additional information about the services provided by Smarthinking may be found at: http://www.smarthinking.com/

An additional form of enhanced student support will be provided by the use of HorizonLive (http://www.horizonlive.com) software. Utilizing a common Web browser, HorizonLive connects a presenter and an audience. The speaker's voice and presentation materials are "pushed" to participants located anywhere on the Internet. Participants can type questions or responses back to the presenter, and to each other, just as in a real classroom. Content for a presentation can be in any Internet-ready format. Possible formats include Microsoft PowerPoint or Word bullet points, graphics, animations, forms that students fill in—anything that could be on a Web site, including live Web sites. The software is being installed during June 2000, and faculty and staff will begin to utilize this new enhanced student support service beginning in July 2000.

Support services for online and distance education programs are challenging. Students who are learning at a distance require a greater array of resources than do traditional students on campus. Online students need administrative support, library support, faculty support, tutoring support, and peer support if they are to succeed in such a program. The FIPSE grant provides us with an opportunity to continue to listen carefully to the needs of our students, and, hopefully, to respond to their needs in a timely fashion. This is an exciting time to be involved in higher education, especially for those who are willing, as Elizabeth Buchanan says, to go the extra mile. Our students corroborate the importance of these efforts. Some comments from some of the NACTEL students may be found at: http://csis.pace.edu/~dsachs/comments/

Biographical Sketch

David Sachs is Assistant Dean and Professor of Office Information Systems in Pace University's School of Computer Science and Information Systems. As Assistant Dean, Dr. Sachs has been actively involved in the development and implementation of computer science and telecommunications courses for the corporate community since 1984. As director of the Pace Computer Learning Center, Dr. Sachs is responsible for the many hundreds of days of personal computer, computer science, and telecommunications education that are provided each year to corporations throughout the United States and around the world such as AT&T, IBM, MCIWorldCom, PepsiCo, The Reader's Digest, Prodigy and others. Most recently, he has been actively involved in the development of courses that are taught asynchronously over the Internet and the World Wide Web. Dr. Sachs is the Director of Pace University's NACTEL Project, and is the Principle Investigator of Pace University's FIPSE LAAP Grant.

Address: Dr. David Sachs
Pace University
1 Martine Avenue
White Plains, NY 10606
E-mail: dsachs@pace.edu
URL: http://csis.pace.edu/~dsachs
Phone: (914) 763-8820
Fax: (914) 763-9324

Integrated Technology Systems Design: A Model for Aligning Pedagogical Quality With Learning Technology

Kathy J. Schmidt
The University of Texas at Austin

Don Olcott, Jr.
VCampus Corporation

During the last decade, the expanding range of learning technologies has created more choices for colleges and universities to deliver instructional programs. Today, this arsenal ranges from interactive television, audiographics, and audio teleconferencing, to computer-based training, Web and Internet applications, and print materials supplemented by audio, video, fax, and computer (Duning, Van Kekerix, & Zaborowski 1993; Olcott 1997a). From what was once an educational environment dominated by live-interactive video as the premium technology delivery system, we have moved to a variety of integrated, asynchronous technologies and approaches (Hanna 1998; Mayadas 1997; Moore & Kearsley, 1996; Olcott 1997a).

The impetus for this changing environment has been the global utilization of the World Wide Web/Internet and an increasing, consistent body of research, documenting the pedagogical and economic effectiveness of lower-end technologies (e.g., audio, Web, print, computer-based training, etc.) (Hardy & Olcott 1995; Moore & Kearsley 1996; Moore & Thompson 1998; Oblinger & Rush 1997).

Despite the unprecedented range of technologies available to colleges and universities, questions related to the most effective pedagogical, economic, and logistical integration of technologies at the course level remain uncharted empirical territory. Moreover, the development of integrated technology approaches has been problematic due to institutional reliance on one technology and the tendency to embrace the technology of choice at the outset rather than systematically examining instructional objectives, pedagogical strategies, student learning styles, and assessment outcomes before making technological choices (Moore & Kearsley 1996; Olcott 1997b).

And for most institutions, technology investments have often been choices about taking advantage of available resources either internally or externally, without the luxury of systematically selecting technologies that best meet program and instructional needs (Duning, Van Kekerix, & Zaborowski 1993; Hardy & Olcott 1995).

Consequently, most institutions build their distance and distributed learning budgets and programs on a hybrid of resources ranging from state funding, federal grants, corporate partnerships, to cost-recovery tuition, inload teaching assignments, and technology fees for students. The result, of course, is that pedagogical and instructional design considerations have been fitted to particular technologies rather than matching technologies to meet specific, well-defined, teaching and learning objectives.

This paper will present an Integrated Technology Systems Design (ITSD) model for integrating learning technologies into individual courses based upon learning objectives, learner characteristics, and assessment outcomes.

A Framework for Integrated Technology Systems Design (ITSD)

Given the range of available technologies today, it is useful to view ITSD from its macro applications to the present emphasis on micro applications at the course level. (Olcott 1991) presented a model for delivering extended degree programs that combined traditional and distance delivery systems. Institutions design their extended degree programs by delivering blocks of courses via technology, correspondence study, off-campus face-to-face instruction, and campus-based instruction.

Olcott (1992) expanded this framework to an interinstitutional design where multiple institutions integrate traditional and distance learning systems to deliver an extended degree program. There are several advantages to this approach for developing extended degree programs. First, they decrease dependency on a single delivery system to delivering an extended degree program and allow institutions to maximize the use of available delivery systems.

Second, they provide institutions an expanded range of delivery options to address design, cost, and logistical factors. And finally, in the interinstitutional framework, institutions can share fiscal and human resources in designing program curriculum blocks, thereby relieving individual institutions from absorbing the total cost of program delivery.

In sum, the effectiveness of these ITSD approaches is predicated on institutions examining the pedagogical attributes of various delivery systems to meet instructional objectives and learning outcomes. Blending traditional and distance learning systems in an arbitrary manner is not synonymous with maintaining instructional quality. Systematic design and technology selection must consider pedagogical attributes for ITSD to be successful. Institutions that arbitrarily assign popular or preferential delivery systems, traditional and distance, will only create an instructional mosaic devoid of pedagogical considerations.

The micro application of ITSD involves integrating multiple delivery systems at the course level by considering instructional objectives, learning outcomes, and technological attributes that are pedagogically proven to enhance teaching and improve learning. Before we examine the pedagogical factors, costs, and logistical attributes of educational technologies, we must review what we know about effective teaching and learning.

Today's information technologies are becoming ubiquitous in the marketplace and in higher education. Can these technologies really reshape how we teach and learn? And, perhaps, more importantly, how will we be able to measure how they impact teaching and learning? The place to start in examining these questions is to examine what we already know about effective teaching and learning.

Pedagogical, Cost, and Logistical Characteristics of Learning Technologies: An ITSD Case Study

One way to incorporate these technological wonders that can enhance teaching and learning is to employ the ITSD framework (Olcott 1997b). By using the ITSD as a guide, it is possible to design courses that integrate sound pedagogical practice enhanced by today's informational technology tools. In the ITSD matrix provided is an example of a graduate level, instructional systems design course based on a 15-week semester timeline. In the matrix, only a single objective for each week is included. The intention here isn't to provide explicit detail for a particular course, but rather to illustrate the ITSD process. These are the overall course objectives:

- Students will be able to describe and demonstrate knowledge of the different components of a systematic design process, their rationales, and uses.
- Students will be able to design instructional modules using a systematic design process.
- Students will be able to identify, compare, and contrast design modules as applied in a variety of settings.

Figure 12.2. ITSD Course Design Matrix

Week	Objectives	Student Performance	Pedagogy/ Learning Theory	Technology	Cost
1	Examine how learning theory perspectives have influenced their own philosophy of education	Baseline knowledge paper	Assessing student's prior knowledge	Presentation software to present content on principles of teaching and learning	Low/Moderate
2	Identify the phases of ISD	Quiz	Monitoring student understanding and progress	Paper/pen	Low
3	Create a matrix for needs assessment data collection	Matrix or checklist	Providing an opportunity for active student practice	Computer software or paper	Low/Moderate
4	Conduct a learner analysis and write a description of the learners	Team exercise	Creating a spontaneous discussion for student problem-solving and reasoning	Videoconference with a classroom site	High
5	Label the component elements for the given behavioral objectives	Exercise	Assessing discipline specific learning	Paper/pen	Low
6	Compare the ISD process in an educational setting and an industrial setting	Participation in electronic chat with practitioners in the field and classmates	Encouraging student to participate actively with classmates and with professionals; increases the feeling of community within the class	Electronic chat room	Low/Moderate

7	Record in a journal perceptions/insights on class content	Journal to instructor	Providing student reflections upon their own learning processes	E-mail	Low
8	Describe the instructional events found in a typical lesson	Descriptive write up and response to a classmate's write up	Reminding student of previous learned materials and providing an opportunity for curriculum content to develop as a group resource	Electronic bulletin board for a threaded discussion response	Low/Moderate
9	Analyze the factors in a given learning environment	Participation in discussion and paper response	Encouraging students to acquire meaning on the basis of experience	Videotape of various learning environments	Moderate
10	In groups, select and research instructional design as applied to a particular setting	Outline of topic/presentation	Promoting collaborative learning where meaning is derived from multiple perspectives	Application sharing environment (sharing more than text messages)	Low/Moderate
11	In groups, present/teach instructional design topic	Presentation by small groups to whole class	Providing instructional feedback through peer and instructor review	Presentation software and Internet connection	Low/Moderate
12	Compare formative and summative evaluation purposes and procedures	Written assignment	Assessing discipline specific learning	Word processing	Low
13	Locate and evaluate three Web sites on ISD	Review of information provided at these Web sites	Improving student analytical skills	World Wide Web	Low
14	With a peer, critique each other's individual module/assignment	Oral and written critique	Recognizing the students who self-question and self-explain often perform more competently and show greater understanding	Paper/pen	Low
15	Present individual module/unit assignment	Individual instructional module	Fostering student sharing of class learning experience	Presentation software, Internet connection, handouts	Low/Moderate

Summary

Integrated Technology Systems Design (ITSD) provides institutions an outreach and campus strategy for harnessing a wide range of available technologies to design and deliver instruction. At the same time, ITSD is a viable approach to systematically assessing pedagogical, economic, and logistical factors to develop an optimum balance between access, cost, and quality.

There are several prerequisites for faculty to effectively employ ITSD approaches. First, faculty must be provided comprehensive training in 1) effective teaching strategies; 2) instructional design and assessment; 3) pedagogical attributes of video, audio, computer, and print media; and 4) the economic and logistical (support service) attributes of integrating various technologies. Moreover, faculty must be encouraged to be innovative, experiment, subsequently gather data on integrating media for instruction, and identify effective attributes for specific learning and outcome objectives.

Olcott summarizes the potential advantages of ITSD:

> The strength of ITSD is that it creates the catalyst for faculty and support personnel in the distance-learning enterprise to critically examine how the synergistic blending of technologies operates in pedagogically effective ways. Empirical research using ITSD is still in its infancy, partially because the Internet and World Wide Web did not exist until recently, and partially because the field had not evolved to the point where lower-end technologies had reached a level of acceptance as viable teaching systems.
>
> Today, the technology landscape has undergone major transformations, and what has emerged is a range of technological options inconceivable even five years ago. The question is whether we take advantage of these tools before our competitors do. (Olcott 1997b, 67-68).

And our competitors are, in fact, already exploring how to build instructional programs using multiple technologies. The ubiquitous use of learning technologies means that there will be more students with more choices in the future. Institutions will have unprecedented competition from existing and new providers who are expanding their technology-based programs.

Moreover, all providers will reexamine their academic calendar structures, student support services, and faculty incentives to create responsive delivery models for serving students anytime, anywhere, in accelerated time frames, and through both asynchronous and synchronous modalities.

Competition, however, is not a sound enough reason to adopt integrative approaches to technology if it means diminishing the overall quality and richness of the teaching and learning process. ITSD has the potential to create models that build on the best attributes of effective teaching, new technologies, instructional design and assessment, and efficient costing approaches. These challenges will be worth the effort for creating optimum uses of technology for students, by faculty, in the 21st century university.

References

Duning, Becky S., Van Kekrix, M. J., & Zaborowski, L. M. (1993). *Reaching learners through telecommunications: Management and leadership strategies for higher education*(1st ed.). In *The Jossey-Bass higher and adult education series*. San Francisco: Jossey-Bass.

Hanna, Donald E. 1998. Higher education in an era of digital competition: Emerging organizational models. *JALN, 2*(1).

Hardy, D. W.,& Olcott, D. J. (1995). Audioconferencing and the adult learner: Strategies for effective practice. *The American Journal of Distance Education*, 9(1), 44-59.

Mayadas, A. F. (1997). Asynchronous learning networks: New possibilities. In D. G. O. a. S. C. Rush (Ed.), *The learning revolution: The challenge of information technology in the academy*. Bolton, MA: Anker.

Moore, M., & Kearsley, G. (1996). *Distance education: A system's view*. Belmont, CA: Wadsworth.

Moore, M. G., & Thompson, M. M. (1998). *The effects of distance learning : A summary of the literature, ACSDE Research Monograph*. University Park, PA: The American Center for the Study of Distance Education.

Oblinger, D. G., and Rush, S. C. (1997). The learning revolution. In D. G. O. a. S. C. Rush (Ed.) *The learning revolution: The challenge of information technology in the academy*. Bolton, MA: Anker.

Olcott, D., J., Jr. (1991). Bridging the gap: Distance learning and academic policy. *Continuing Higher Education Review, 55*(1&2), 49-60.

Olcott, D., Jr. (1992). Policy issues in statewide delivery of university programs by telecommunications. *The American Journal of Distance Education, 6*(1),14-26.

Olcott, D. J., Jr. (1997a). Renewing the vision: Past perspectives and future implications for distance education. *The Journal of Continuing Higher Education, 45*(3), 2-13.

Olcott, D. J., Jr. (1997b). Transforming university outreach: Integrated technology systems design for the twenty-first century. *Journal of Public Service and Outreach, 2*(3), 55-69.

Schmidt, K. J., & Olcott, D. J. (2000). Integrated technology systems design: A model for aligning pedagogical quality with learning technology. In Donald E. Hanna, Ed., *Higher Education in an Era of Digital Competition: Choices and Cha*llenges (pp. 287-309). Madison, Wisconsin: Atwood Publishing.

(Excerpts of this paper were reprinted with permission from Atwood Publishing, Madison, Wisconsin. All Rights Reserved.)

Biographical Sketches

Kathy J. Schmidt is the manager of the Instructional Media Lab (IML) for the College of Engineering at the University of Texas at Austin. In this position, she promotes the College of Engineering's commitment to finding new ways to enrich teaching and learning. Dr. Schmidt has over fifteen years experience in designing technology-based education in higher education, K-12, the military, and the private sector.

Address: Mail Code C2200, College of Engineering
The University of Texas
Austin, TX 78712
E-mail: k.Schmidt@mail.utexas.edu
Phone: (512) 232-1536
Fax: (512) 471-8727

Dr. Don Olcott, Jr. is Associate Vice President for Higher Education Services with VCampus Corporation. VCampus is a national and international leader in providing education and training to universities, corporations, and government agencies through web-based administrative, course management, and delivery and hosting services. Dr. Olcott previously served as the Associate Dean for Extended University at the University of Arizona. He has held administrative and faculty appointments with the Western Interstate Commission for Higher Education (WICHE), Oregon State University, the University of Missouri-Columbia, Western Washington University, Burlington Testing, Inc., and the United States Air Force. Dr. Olcott has over 20 years of public and private sector experience in the design, delivery, and evaluation of higher education degree and training programs delivered via technology. Don was the 2000 University Continuing Education Association's (UCEA) Gayle B. Childs award recipient for exemplary long-term leadership, scholarship, and applied contributions to the field of distance learning. He received the 1998 Charles Wedemeyer Outstanding Distance Learning Practitioner in North America award from the University of Wisconsin-Madison and The American Center for the Study of Distance Education. He has received numerous national and professional awards for leadership, publishing, and distinguished service to the field of continuing and distance education. Dr. Olcott serves on the Board of Directors for the National University Telecommunications Network (NUTN, the Advisory Board of the University of Texas System TeleCampus, and is a member of the Editorial Staff of *The American Journal of Distance Education*. He is a nationally known speaker and has consulted to colleges, universities, and corporations across the United States and Canada. He is the current Co-Chair of UCEA West and is a graduate of Harvard University's Institute for the Management of Lifelong Education. Dr. Olcott was the founder of WICHE's Institute for the Management of Distance Education (MDE). Don received his bachelors and masters' degrees from Western Washington University and his doctorate in higher education leadership from Oregon State University. Don's personal interests include sports, music, and history. He lives with his wife Janie in Tucson, Arizona. His daughters, Kelli and Carrie, reside in Colorado and California.

Address: VCampus Corporation
2642 W. Brandy Crest Dr.
Tucson, AZ 85713
E-mail: dolcott@vcampus.com
Phone: (520) 882-3936
Fax: (520) 624-5459

Implementing e-Learning Through WBT: A Case Study by Arthur Andersen

Amanda S. Schulze
Instructional Design Consultant
Arthur Andersen Performance and Learning

Succeeding in today's economy means competing globally, being dynamic through a sea of constant change and exceeding demands of clients. In order to arm employees with the knowledge and skills needed for today's economy, learning and working must be closely integrated.

Trying to integrate learning into the work environment, Arthur Andersen's Tax Division has taken the plunge to meet the immediate training needs of employees through web-based training (WBT).

For the last twenty-five years the Tax Division within Arthur Andersen, a global professional services organization, provided 90% of training to employees through an instructor-led, centralized training curriculum. It was obvious from the feedback of employees, this training structure was not always providing the right knowledge and skills needed at the right time. However, solutions, such as WBT, for immediate training needs were not easy to implement in an organization that boasts being a provider of instructor-led training in a world-class training facility.

This paper recounts the process Arthur Andersen's Tax Division undertook to begin implementing e-Learning through WBT into an instructor-led curriculum.

The Implementation Obstacles

The greatest barrier to implementing WBT into our instructor-led curriculum was the Arthur Andersen culture. Leadership was convinced that creating WBT or converting existing instructor-led courses into WBT would ridicule learning in our organization. In addition, leadership felt that sending employees to a centralized training center allowed for networking and the development of a strong organizational culture and traditions. They felt that a web solution meant we did not value the education of our employees. In order to overcome this barrier, we began to educate leadership on the advantages of WBT.

Even after numerous conversations, presentations and literature reviews, leadership was still not convinced. We finally began to realize that by introducing WBT we were threatening our current curriculum. In other words, there was fear that all training would become WBT. Once we understood what our leadership feared, we were able to communicate that we were not replacing all instructor-led training with WBT. Centralized, instructor-led training will always be the primary training medium for Arthur Andersen's Tax Division; however, in some situations it is not the only or best solution.

After five months of negotiation, we were able to obtain a sponsor who was willing to implement WBT into our instructor-led curriculum. We were given $15,000 and told to accomplish the following goals:

- Determine the effectiveness of WBT to build knowledge and skills
- Gather feedback from Arthur Andersen employees regarding the web as a training medium
- Identify additional WBT opportunities that may save travel time and costs
- Obtain AMAZING results for support of future WBT projects

Based on the amount of money we were given to accomplish these goals, our team could not design or develop our own WBT or even customize any existing WBT. Since we wanted quick and easy results to show our sponsor, using a WBT vendor was the ideal option for us.

The WBT Pilot Project

One hundred twenty-five WBT pilot participants were selected from a group of 600 Arthur Andersen Tax Division employees. These participants were selected because they were registered to attend instructor-led training courses in our centralized training facility for one week. These pilot participants consisted of new Arthur Andersen Tax Consultants and Arthur Andersen Senior Tax Consultants from varying office locations and with a variety of educational backgrounds.

We chose five instructor-led courses and replaced these courses with five comparable web-based courses for our pilot participants. There were approximately twenty-five participants taking each web course and each pilot participant took only one web course. The five web courses were offered one month prior to the participants' arrival to our centralized training facility. In addition, when the pilot participants arrived for training, we set-up a computer lab at the training facility that the pilot participants could use to begin or continue taking their web course.

Selecting WBT Vendors

There are literally millions of WBT vendors to choose from. We initiated conversations with other Arthur Andersen WBT vendor users to determine which vendors had been well received. Based on the list of WBT vendors we generated, we created a WBT vendor evaluation process. From this process we chose two web courses from SkillSoft and three courses from Yipinet, which is now called e-Mind. The two courses from SkillSoft were both communication courses. The courses from Yipinet were time management and two tax technical courses.

All of the vendor courses we selected matched the content and skills covered in the comparable instructor-led courses we were replacing for our pilot participants. The two vendors, SkillSoft and Yipinet, were closest to what we were looking for in terms of content, functionality and usability.

Delivery Model

All five of the courses we selected for the WBT pilot were self-study. Constrained due to time and money, no customization could be done to these web courses though both vendors offered this option. From the beginning, we thought the self-study model was not the best for our pilot participants, especially when using vendor materials that did not include Arthur Andersen examples and information that trainees would normally get in the classroom.

Evaluation Strategy

At the end of each web course participants filled out an evaluation form on-line. In addition, when participants arrived at our centralized training facility, they completed a paper-based in-depth evaluation form. We also conducted lunch debriefs with the participants to collect verbal comments regarding their WBT experience.

Key Results

Learning Gain

One of our goals was to determine the effectiveness of WBT to build knowledge and skills. In other words did they learn through the web? In order to do this we compared the learning gain of each instructor led course to its comparable web-based course used in the pilot. The questions used to calculate learning gain were as follows:

1. To what extent did you understand the information/ concepts presented **prior** to this training?
2. To what extent do you now understand the information/concepts presented **after** completing this training?

The scale used to calculate learning gain was a five-point scale where five equaled "Very much so" and one equaled "Not at all." The learning gain for pilot participants of the web-based courses was equal to or greater than the learning gain for trainees in the comparable instructor-led courses. Learning gain for the web courses were 0 to 0.4 points higher than the instructor-led courses.

An explanation for a higher learning gain through WBT could be because of the focused learning that was given to participants in the WBT pilot. For example, 95% of the pilot participants took an accelerated path that was offered to them in the WBT. This path told learners what content they already knew and what content they needed to focus on within the course. In addition, all of the web courses provided immediate feedback on tests and quizzes, and allowed the participants the ability to go back and review material within each course.

Overall Quality

The overall quality rating for all web courses was lower than those of all instructor-led courses. The question used to calculate overall quality was as follows:

- How would you rate the overall quality of this web-based course?

Consistently throughout all five courses, the quality of the instructor-led courses was .4 points higher than each of the web courses. A reason for a lower quality rating for the web courses was that instructors were not available on-line for questions, suggestions, or discussions. In addition, the web courses contained few real-world examples. Participants had trouble navigating through the courses and often could not tell when they had completed a course. Finally, 60% to 80% of the WBT pilot participants experienced technology difficulties while taking their web course.

Course Content

We also looked at the comparison of the different kinds of course content that the pilot participants experienced. The tax technical courses received overall lower ratings than the two communication courses and the time management course.

Participants taking a tax technical course indicated they needed Arthur Andersen examples and content to assist their learning. In addition, they wanted to interact with a live instructor because the content was more difficult for them to learn. Hearing their peers' examples and experiences with the tax content was also identified as a need. Some of the WBT pilot participants actually asked managers in their offices when they had questions regarding the tax content.

Learning Location

Another area we were interested in was the preferred located of our participants for taking a web course. Within the pilot we gave the participants the option to take or begin the courses in their local office before coming to our centralized training facility. We then asked participants what they thought about this experience both on the evaluations and during the lunch debriefs.

Just as a reference, approximately 30% of the pilot participants finished their web course before arriving at our centralized training facility. Pilot participants identified both positive and negative items about taking a web courses in the local office.

Reasons participants did not want to take the web courses in their local office were as follows:

- No computer to run the web course
- Managers thought they were playing on the computer; not learning
- No time to take training in the office
- Too many interruptions in the office

Reasons participants did take the web courses in their local office were as follows:

- Manager supporting them to complete the training
- Time available during the work day to complete the course
- Stayed after work in the evening to complete the course

WBT Vendors

Neither of the WBT vendors used in the pilot matched all our needs. However, we presented the pilot feedback to both of these vendors and they were receptive to the feedback and willing to continue working with us to meet out training needs.

Best Practices for Implementing WBT

Based on our WBT pilot, we have compiled a list of best practices to consider when implementing WBT into an instructor-led curriculum.

1. Leadership support is crucial.
   Leadership support is needed in all areas of the organization from the top down. Without it you are doomed to fail.
2. Allow participants to self-select when to take WBT and when to attend an instructor-led course if possible.
   The participants in our WBT pilot felt as though we were forcing them to take a web course since they were selected and not asked to participate. Employees are much more likely to learn when they have a need for the training rather than being forced to take it.
3. Communicate the benefits of WBT.
   After the pilot we learned that 95% of our participants had never taken a web course previously. We did not take the time to inform them of the benefits of WBT. We assumed everyone knew how great WBT is. If we had provided this information, participants may have been more receptable to the training.
4. Have your WBT criteria identified before choosing or developing your courses.
   This is helpful when working with vendors or building your own WBT. There may be specific criteria or functionality that you know all WBT should have, such as a search function. However, there may be additional criteria needed for your specific audience.
5. Define WBT vendor course requirements.
   This is extremely important and will assist you when it is time to negotiate a contract with your selected vendor. After going through the WBT pilot, we are much more critical of vendors and our course requirements are clearly defined. This also helps us quickly eliminate vendors that do not match our criteria.
6. Know your audience; they may be Net-Newbies.

One of the successes we counted on was the audience approval for WBT. In the pilot we had 21-28 year olds, and therefore assumed this age group would be receptive to the technology. One of the things that I learned from the web pilot is that not everyone is as excited about WBT as I am. As stated earlier, 95% of the pilot participants had never take a web course before.

7. Expect technology glitches.
   If you are implementing WBT for the first or fiftieth time you are going to have technology problems. Make sure to provide participants with a number to call for help or someone to contact for assistance. Document the technology problems and plan on decreasing their impact for your next WBT offering.

Session Description

In order to arm employees with the knowledge and skills needed for today's economy, learning and working must be closely integrated. This session describes how a division in Arthur Andersen implemented e-Learning through WBT.

At the end of this session you will have shared and gathered:

- Best practices for implementing WBT into an instructor-led curriculum
- Tools and processes for selecting the right WBT vendor
- Samples of WBT evaluations strategies

Biographical Sketch

Amanda Schulze is a Senior Instructional Design Consultant with Arthur Andersen Performance and Learning. Amanda graduated from the University of Illinois with a M.S. in Human Resource Development. Amanda recently co-authored and co-presented a paper on Corporate University's at the Academy for Human Resource Development. Amanda previously focused her career on designing and developing instructor led global and U.S. training. However, currently Amanda is looking to specialize in web-based training with an eventual focus on combining technology with on the job learning.

Address: 130 South Canal Street #320
Chicago, Illinois 60606
E-mail: schulzeas@email.com
Phone: (312) 258-1840

Beyond Single Course Evaluation:
An Expanded Approach to the Evaluation
# of Distance Education Degree Programs

Rick L. Shearer, Assistant Director, ID&D
The World Campus/Department of Distance Education
The Pennsylvania State University

Dr. Melody Thompson, Associate Director
Penn State World Campus
The Pennsylvania State University

The Evaluation Plan

As the focus of distance education in the United States has shifted from that of single course delivery to an emphasis on program delivery, the need to expand evaluation beyond the course level has become extremely important. Evaluation for distance education needs to move beyond that of satisfaction levels and student/faculty perceptions to a programmatic and institutional focus. Evaluation of distance education programs will require the tracking of key faculty and student variables throughout the course of study and the integration of evaluation results into the institution's normal tenure and promotion review processes.

In order to address this need for an expanded evaluation focus Penn State's World Campus established a three-tier approach to the evaluation of the student and faculty experience in academic certificate and degree programs offered at a distance. The three tiers or areas of assessment are:

- assessment at the course level
- assessment at the program level, and
- integration of distance education evaluation into the existing structure of the institutions course/faculty review process.

Each of these tiers is unique and has specific yet often overlapping audiences. At the course level there is a need for information pertaining to the instructional design elements, satisfaction, and perceived learning gains. This focus needed to be expanded beyond traditional approaches to examine the key constructs associated with on-line learning environments (see Influence of Flashlight Project). The instrument(s) used at the course level address the informational needs of the instructional design and development staff, the academic department (in terms of student's satisfaction with the course), Learner Support, Technical Support, and the World Campus administration in terms of the effectiveness of this method of course delivery. However, at this level specific questions related to instructor satisfaction and effectiveness are omitted as these questions are part of the standard university course evaluation instrument used by departments for faculty tenure and promotion, and are a part of the third tier of the evaluation plan.

The constituents of the program level evaluation involve all levels of the World Campus and also reflect the requirements for evaluation reports imposed by the main external funding agency. To meet this need the World Campus has contracted with Penn State's Center for the Study of Higher Education to conduct a series of yearly evaluations of programs. The focus of program-level evaluation is on 1) determining the overall impact that the program has had in assisting the students to meet their learning goals, and on the satisfaction of students who have completed more than three courses in the program of study, and 2) the impact on faculty involved in teaching courses throughout the program. The center has conducted focus groups, telephone surveys, and is in the process of administering a program level evaluation form.

The audience for the third tier, or the integration of distance education evaluation into the existing structure of the university, which is conducted at the course level, is handled by the academic departments. Here each academic department administers the standard end of course SRTE (Student Rating of Instructional Effectiveness), the results of which become part of each faculty's portfolio. These evaluation instruments are handled by the academic departments and are returned directly to them, thus assuring the anonymity of the student and privacy of the information contained in them.

Influence of the Flashlight Workshop

In order to assist with the re-focusing of the End of Course Evaluation instrument a small group associated with implementing the evaluation plan attended a two day workshop in early October 1999 sponsored by the Flashlight Project. The materials and information presented at the workshop helped in clarifying the main themes that the World Campus needed to focus on, in terms of on-line learning environments. It was the consciences of the evaluation team that two main constructs that are much different in on-line learning environments, as compared to the more traditional Independent Study or Correspondence model, needed to be addressed in the survey instrument. These constructs were: 1) the impact of the asynchronous communications environment on meeting learning goals, and 2) the impact of a cohort based model (one where all students start course work on the same day and end with a final project or exam in the same week) in facilitating the timely completion of distance education courses. As Penn State had been successfully delivering courses at a distance for over 100 years it was the opinion of the group that these two key attributes of on-line learning environments should be addressed to determine if they were enabling the students course goals or inhibiting the attainment of competencies outlined in the learning objectives.

Key questions which were included in the end of course survey included:

- I have felt part of a learning community through my experience with this course?
- The electronic communication technologies allowed me to actively participate in scheduled discussions about the course material?
- The electronic communication technologies supported the discussion of ideas and concepts taught in the course with other students?
- The electronic communication technologies made me feel isolated from the instructor?

- In this course, how important to your learning were interactions with your instructor?
- The structured timeframe of this course allowed me to benefit from interaction with other students?
- The structured timeframe of this course helped me stay on task and progress through the course?
- The structured timeframe of this course made it hard for me to fit the course into my other responsibilities?

Preliminary Results

The new end of course survey which emerged as a result of the Flashlight Project workshop has been administered to two cohorts, Fall 1999 and Spring 2000. Overall comparison between the two cohorts shows an improved level of satisfaction in all areas. This shift in satisfaction rating indicates more students selecting excellent and fewer selecting the neutral (average) rating.

With regard to the key questions outlined above, the following general statements can be made:

- While there has been a slight increase in the number of students who felt strongly in regard to being a part of a learning community there is still a substantial number who are undecided. This may be due to a misunderstanding of the term "learning community" or that the particular course does not rely heavily on group projects.
- In regard to the electronic communications technologies facilitating participation in group discussions and interactions with the faculty we have seen a substantial shift from the undecided category to the agree and strongly agree categories. This may be due to familiarity of continuing students with the communications environment, or the increased experience of faculty in interacting with students at a distance through these systems.
- In conjunction with the questions which deal with facilitating interaction and participation through the communications environments we have also seen a positive shift towards a feeling of less isolation on the part of the student. This again may be explained by the increased comfort that on-going students have with taking courses at a distance and familiarity with the technology tools.
- In terms of the cohort structure it would appear that the structured timeline assists students in participating in scheduled discussions. It also appears to assist them in the scheduling of their time in meeting mile stones established in each course. However, there has not been a perceivable shift indicating that the structured format assists students in fitting the course into other on-going life responsibilities. Thus the structured cohort model tends to assist students in terms of staying on task and completing the course in a timely manner, however, it is no better or worse than traditional correspondence programs in helping students fit course work into busy life schedules.

Discussion

The evaluation plan for the World Campus is still in the early stages of implementation and results from the broader program level evaluation are just now being collected. However, the feedback we have received through the new end of course survey are encouraging in that they are answering specific questions which are unique to on-line learning at a distance. Further, the integration of this information into the university's standard SRTE instrument ,used by the academic departments, still needs to be resolved in terms of process. As the evaluation plan continues to be implemented and tested revisions will be made to assure that Penn State and the World Campus have a cohesive evaluation plan which addresses distance education at the program level.

Biographical Sketches

Rick L. Shearer is an Assistant Director for Instruction Design and Development, and Program Manager with the World Campus/Department of Distance Education at The Pennsylvania State University. He is responsible for the project management of several World Campus academic programs and acts as the Lead Instructional Designer for the Noise Control Engineering Program. Prior to joining Penn State Mr. Shearer was the Director of Research and Instructional Systems at National University in California. Mr. Shearer has presented at a number of conferences on the topic of distance education since 1992 and has been a frequent presenter at the Wisconsin conference. His sessions have focused on learner control, dynamic systems, and video teleconferencing.

Address: The World Campus/Department of Distance Education
The Pennsylvania State University
210 Rider II
University Park, PA 16801
E-mail: rxs57@psu.edu
Phone: (814) 865-0642
Fax: (814) 863-2362

Dr. Melody Thompson is the Associate Director for Penn State's World Campus and heads up the evaluation committee for Distance Education and the World Campus. Dr. Thompson is also on the faculty of the Department of Adult Education. Prior to joining the World Campus Dr. Thompson worked for the American Journal of Distance Education. Dr. Melody Thompson has presented at numerous conferences over the years. Her current focus has been on the evaluation of distance education programs and courses.

Address: The World Campus/Department of Distance Education
The Pennsylvania State University
211 Mitchell Building
University Park, PA 16802
E-mail: mmt2@psu.edu
Phone: (814) 865-0653
Fax: (814) 865-3290

Library? What Library?
Building Research Requirements Into Distance Courses

Rhonda M. Smith
Distance Learning Librarian
Florida Distance Learning Reference & Referral Center

A New Opportunity

How do distance learners find "the library" and what do they find when they get there? Less than twenty years ago, a university librarian could write "…external study does not, and cannot, provide the same or an equivalent educational experience as may be available to the students on a well established and equipped institutional campus….However willing librarians may be, however interested to attack the problems, the resources and funds are not presently available to make any conceivable solution possible in the short term." (Allen, 1982, p. 541).

A mid-1990's review of the literature on distance learning library support (Stephens, 1996) reveals two basic approaches to providing students with supplementary reading, exemplified by the British Open University's introductory and advanced courses. Students in basic courses were provided with extensive supplementary reading via printed anthologies. Students in upper level courses were simply required to do independent library research without regard to whether or not they had access to an adequate library. The former approach privileged the material and the latter the method, but in neither case did the university take responsibility for providing the total learning experience characteristic of the research element of traditional courses. Studies of Australian and North American distance education programs offered more variety, with the best services doing literature searches for students and shipping books and journal articles from dedicated collections.

Like Allen, however, most of the authors reviewed by Stephens were clear, that what was lacking was not only books and journals *per se*, but instruction and the opportunity to learn to do independent library research. The distance learner was being left out of the growing emphasis on the inculcation of skills necessary to life-long learning.

Today, as those skills are expanded to include new media, the "equivalent service" that was seen as impossible before is exactly what is being mandated by the Association of College and Research Libraries.

> Members of the distance learning community are entitled to library services and resources equivalent to those provided for students and faculty in traditional campus settings. The instilling of lifelong learning skills through information literacy instruction in academic libraries is a primary outcome of higher education. Such preparation is of equal necessity for the distance learning community as it is for those on the traditional campus. (ACRL, 1998).

This same demand is also appearing in the criteria of regional accrediting bodies. For instance, the Northeast Association of Schools and Colleges' 1998 policy for distance learning requires that

- The institution ensures that students have access to and can effectively use appropriate library and information resources.
- The institution requires that students make appropriate use of learning resources.

The Southern Association of Schools and Colleges' criteria for the accreditation of distance education programs include similar text.

Learning resources and services must be adequate to support the needs of users. The size of collections and the amount of money spent on resources and services do not ensure adequacy. Of more importance are the quality, relevance, accessibility, availability and delivery of resources and services, and their actual use by students, regardless of location.

What makes this possible is, of course, the same telecommunications revolution that has changed course delivery beyond all recognition. The Internet not only offers the free resources of the World Wide Web; it is also a delivery mechanism for a rapidly expanding range of library resources and services.

Library Resources Online

What is truly exciting is that these are not second-best alternatives for distance learners, but the very resources and services that librarians are actively choosing and on-campus students and faculty are actually using, because of their superior capabilities. In many cases, meeting the needs of distance learners has actually been a catalyst for the improvement of services to all library patrons.

There are differences among libraries in the kind and quantity of resources and services they offer, but looking at the good practices of a variety of institutions shows just how much is possible. Librarians in large institutions will admit resources and services are changing so fast that keeping abreast of what is available is a major task. They want to share this information with faculty so that they can offer the best experience possible to students. (Because these resources are almost all limited to the affiliates of providing institutions, URL's are not given here. These or similar resources will be demonstrated at the Conference and an online version including screen captures will be available at http://www.rrc.usf.edu/pres/index.html from August 7th 2000.)

Matching Resources With Course Objectives

Librarians can help course designers and faculty by suggesting resources and services that support the objectives of a particular course and the teaching methods of the instructor. At the Florida Distance Learning Reference and Referral Center, we prepare course-specific Web pages to which a faculty member can link.

Learning to Identify and Evaluate One's Own Sources

Online library catalogs are now so standard that it is easy to forget how recent they are and the profound qualitative change they made to the kind of work distance learners could do. Instead of sending off a request for a librarian to "send me something on…." they could formulate and refine their own searches, responding instantly to the results they got. Catalog access is now supplemented by a variety of subscription services that provide some combination of tables of contents, indexing, abstracting, and full text for journal articles. There are literally hundreds of these and students are guided to the most useful for their particular course.

Indexing and abstracting databases. Many of these are subject-specific descendents of print indexes, with greatly expanded search capabilities. Examples are *MLA Bibliography*, *Cambridge Scientific Abstracts*, and the various versions of *Psychological Abstracts*.

Full-text databases. These provide indexing and online full text for at least a substantial portion of articles. Some examples are *Lexis-Nexis* (general news, business information, and legal research), WilsonSelect (popular magazines and good but limited selection of academic journals) and *Career and Technical Education* (trade journals for practical subjects).

Journal aggregators. These provide table of contents and searchable index access to participating journals. Licensing agreements may include access to the full text of all articles or allow selective subscription, sometimes tied to print subscriptions. Coverage may be limited to older issues. Examples are *JSTOR* and *Project Muse*.

Learning to Use Specific Tools

Tools of the trade. More and more of the standard reference works for specific disciplines are available online through library licenses. Examples include Standard & Poor's *Net Advantage* for business, *Beilstein* for chemistry, *IEEE Standards* for electrical engineers, *Buros Mental Measurements Yearbook* for psychology or Gale's *Literature Resource Center* for English. Libraries can also suggest and expedite access to free sources on the Internet, including commercial organizations (e.g. the *Merck Manual of Diagnosis and Therapy*) and the constantly rising percentage of government publications that are available online. Once the necessary skills are learned, these tools are as easy or easier to use and often provide more up-to-date information than was available in print.

General reference works. These include dictionaries, encyclopaedias, and directories. As examples, the Web version of the *Oxford English Dictionary* that has just become available will incorporate new material.

Learning Specific Content

Electronic reserves. Where the course requires familiarity with a specific body of content, electronic reserves can replace mailed course packets or off campus print reserve collections. The library accepts published or instructor-originated material and provides it to students via its Web site. Copyright regulations are observed and documents are password protected. Costs are lower and there is a shorter lead-time than required for printed packets. Increasingly, libraries offer faculty the opportunity to request the inclusion of published material using an online form and to submit their own documents electronically.

Webliographies. Where the required material is already freely available on the Internet, the library may provide hypertext links from the catalog or subject bibliographies.

Remaining Differences for Distance Learners

Despite the growing amount of full-text material online, distance learners in more advanced courses or those pursuing more unusual topics may be able to do better work if they obtain copies of books and journal articles that are only available in print. Libraries that are providing a reasonable standard of service for distance learners will mail this material to them. Though many will also fax articles and a movement to electronic delivery is gathering speed, there is still a time factor that is different than for the on-campus learner. If shown assignments at the planning stage, librarians can alert course designers and faculty members to possible pitfalls so that they can provide realistic timetables and supportive intermediate deadlines or reconsider the exact sources required.

Finding the Library

On campus, most students will, at the very least, take a campus tour that leads them past the library. Thereafter, they will see that big building nearly every day and if they need it, they will know how to make it to the front door. They may be required to attend a library instruction session and even if they don't remember how to use a particular resource, they are likely to remember that it exists and that they can ask a reference librarian. Distance learning librarians, administrators and teaching faculty need to work together to create a virtual equivalent for the distance learner.

References

Allen, G. C. (1982). The role of the library in higher education and the implications for the external mode of study: An Australian perspective. *Higher Education, ll*, 531-543.

Association of College and Research Libraries. (1998). *Acrl guidelines for distance learning library services*. Retrieved from the Web 6/12/2000. http://caspian.switchinc.org/~distlearn/guidelines/

Northeast Association of Schools and Colleges Commission on Institutions of Higher Education. (1998). *Policy for the accreditation of academic degree and certificate programs offered through distance education*. Retrieved from the Web 6/13/2000. http://caspian.switchinc.org/~distlearn/guidelines/

Southern Association of Schools and Colleges Commission of Colleges. (1997). *SACS Distance Education: Definition and Principles, 5.1.1*. Retrieved from the Web 6/13/2000. http://www.kctcs.net/DistLrn/SACS/criteria.html

Stephens, K. 1996. The Role of the Library in Distance Learning: a Review of UK, North American and Australian Literature. *The New Review of Academic Librarianship, 2*, 205-234.

Biographical Sketch

Rhonda Smith is a 1997 graduate of the University of South Florida School of Library and Information Science. As a SLIS student, she experienced distance learning courses from one side of the fence and she has now crossed over to work for the Florida Distance Learning Reference and Referral Center as a reference and instruction librarian. She also has an MA in Sociology from the University of Glasgow, Scotland and has worked in adult literacy and youth employment programs and in the book trade. She has presented at Internet Librarian (1998), The American Library Association Annual Conference (poster session 1999) and The Florida Library Association Conference (1999).

Address:
E-mail: Rhonda@lib.usf.edu
URL: www.rrc.usf.edu
Phone: (813) 974-8587
Fax: (813) 974-8375

Wow! They Can See Me:
Enhancing Presentation Skills via Videoconferencing

Stephen Smith
Senior Instructional Designer
Arthur Andersen Performance and Learning

Stephen Boyd
Senior Instructional Designer
Arthur Andersen Performance and Learning

Videoconferencing introduces geographically separated participants with an opportunity to broadcast and interact with audio and visual learning images and materials. Although not a new technology, innovations in its use create an environment where videoconferencing equipment can be used by a variety of organizations. Whether in academic, corporate, or non-profit environments, videoconferencing technology allows learners to not only hear, but see their instructor. This distance learning interaction provides a valuable tool to instructional professionals. In addition, the ability to broadcast and share computer-based tools through videoconferencing provides learning opportunities.

Videoconferencing Experience in the Here and Now

Videoconferencing provides a distribution medium for instruction. In our experience we have used videoconferencing to teach Southern Illinois University business students the ins and outs of Value Dynamics^{SM}, held critical meetings with partners from different continents, and built training for Arthur Andersen professionals charged with increasing the efficiencies of use evident in videoconferencing. Each experience proves valuable in building our knowledge base of videoconferencing design practice.

Delivering a semester long business course from points across the globe proved valuable in learning the ins and outs of videoconferencing. In an arrangement between Arthur Andersen and Southern Illinois University, an MBA course, Cracking the Value Code, was taught to teach students about Value Dynamics^{SM}. This opportunity also created a chance for firm leadership to share their knowledge in an academic setting. The class proved beneficial in regards to the fact that we had experts teaching each evening. When the class discussed strategy, a firm leader from the United Kingdom addressed the class. When the topic turned towards technology, a partner fresh from a day's work in the Silicon Valley addressed the class. Likewise industry program leaders delivered specific industry expertise to enhance the learning experience. Our enhanced real-time access to experts was one benefit of this videoconferencing experience.

Geographic separation proved irrelevant to the needs of the class. In delivering the Cracking the Value Code course via videoconference we possessed the ability to schedule expert instructors around a host of scheduling conflicts and work around the busy schedules of our instructors. In fact our lead instructor often "joined the class" from a place of great comfort, his den. Advances in videoconferencing technology allowed us to use the equipment installed in our lead instructor's home.

At a critical junction during another project, it was decided to hold a meeting to discuss moving the project forward. The only hitch was a key team member lived in Australia. The notion sitting in an airplane during a 40 plus hour roundtrip fare for a four-hour meeting proved a major stumbling block to this team member's participating in the meeting. Obtaining continued management buy-in at the meeting was critical and the distance between participants was overcome by videoconferencing technology. The team met, critical momentum was maintained, and the Australian team member left for home a little more rested than a mad dash back and forth across the Pacific would have demanded. Overcoming geographical separation proves another critical factor driving videoconferencing.

Future Practice: WAPs and WASPs

No discussion about videoconferencing would be complete without a brief "technology plug." Two terms loom on the horizon concerning the widespread application of videoconferencing technology. The terms WAP (Wireless Application Protocol) and WASP Wireless Application Service Providers represent concepts and practice involving the use of videoconferencing across wireless applications. This movement is especially strong in Europe as companies rush to deliver services and value to wireless phone users. In regards to videoconferencing, the ability to have a "wireless video call" allows people to receive video images and materials via a portable wireless tool proves interesting to consider when thinking about the increased use of videoconferencing. Maybe the new slogan becomes "eyes in the palm of your hand?" The new technology concerning wireless video access provides an intriguing tool to improve instruction where "see you, see me" techniques prove beneficial to learning.

The Next Challenge: Building Critical Mass

Our next challenge rests in teaching professionals how to harness the capabilities of videoconferencing. Often the simple awareness of this capability lights fires under people accustomed to other methods of delivering instruction and information. Attempting to be at the vanguard of videoconferencing design and delivery demands a critical mass of practitioners achieving the power of videoconferencing. Achieving this critical mass is the challenge that awaits us. The next section deals with specific design issues we face in designing videoconference based instructional events.

Videoconferencing Design Elements

In our experiences designing videoconference training, we find the same design elements used to achieve successful classroom instruction also apply to videoconference training. The challenge with videoconference training rests in adapting what is already known to fit within the videoconference medium. In the following section, we share our lessons learned. We focus on five areas:

1. Setting participant expectations
2. Timing
3. Conducting activities and discussions
4. Supporting visuals
5. Instructor delivery skills

Setting Participant Expectations

As with any new way of doing something, change management issues must be addressed. In creating a motivating and supportive environment one must inform the participants of these changes and their impacts. We suggest doing this both prior to the instruction and at the beginning of the session. Some of the changes participants may experience include:

- *Assume that you can always be seen and heard:* Participants may walk into the classroom and find their videoconference monitor off, or showing a graphic. The assumption often made is that "If I can't see or hear anybody, then they can't see or hear me." As you can imagine, this can become a potentially dangerous and often embarrassing assumption. You should always assume that you can be both seen and heard when in a room with videoconference equipment.
- *Do not hide from the camera*: Depending on your equipment and setup, participants may see themselves on camera. This may be discomforting to some participants, and they will position themselves so that the camera does not see them. Remind participants that a significant benefit to videoconference is the ability to both see and hear each other. If everyone hides from the camera, then you might as well do an audio conference. If possible, we suggest setting up your equipment so participants are unable to see themselves. This not only eliminates the problem, but it draws less attention to fact that videoconference training is any different from a regular classroom.
- *Be willing to participant in different ways*: Participants may be asked to participate in ways that are different than what they are used to. For example, when having a discussion, participants may be asked to follow certain protocols. For example, a discussion in a face-to-face environment may be free form, with participants entering into and out of the discussion freely. This free form discussion proves difficult in a videoconference. Participants may be asked to follow protocols, such as raising their hand and waiting until the camera is focused on them before they speak.
- *Maintain Focus*: It is important to remind participants that they are not watching television. Unlike television, videoconference training is interactive. Like a regular classroom, participants will not be able to watch passively. They will be expected and asked to participate. Active participation remains an elusive goal, but one possible in a videoconferencing environment.

Timing

Even though you set the expectation that videoconference is not like watching television, participants still tend to become "couch potatoes." In order to prevent this, you must adjust the timing of your training. Here are some suggestions to think about when designing your training.

- *Limit the overall time:* Based on the passive nature of the medium we do not suggest having videoconference training that lasts more than 4 hours. If you need more time, break up the training into 2 to 4 hour chunks.
- *Add more time overall:* Due to some of the protocols mentioned above and the general nature of the technology, videoconferencing requires more time than training in a regular classroom.
- *Remember time zones:* When videoconferencing between time zones, consider the impact of start times, end times, breaks, meals, etc.
- *Change perspectives frequently:* Like television, if you watched the same picture for hours you would become very uninterested. The same is true for videoconference training. Change your camera angles often, shorten the lecture portions, and use various types of media. In short, keep things lively and moving.

Conducting Activities and Discussions

Integrating activities and discussions into your instructional design is one of the best ways to keep your videoconference training lively and moving; however, as we have already briefly discussed, there are certain considerations for conducting activities and discussions in a videoconference environment.

Activities

- *Plan ahead for materials:* Unlike a traditional classroom, you will not be able to distribute handouts or materials in real time. Plan ahead, making sure that each site has all the necessary materials prior to the session.
- *Determine groups ahead of time:* When assigning group activities in videoconference training, the tendency is to make each site a group. Remember that one of the benefits of training is the ability to meet new people and increase your network. Take this into consideration and if possible create across-site groups.
- *Add more time:* The above, coupled with other factors, make activities in a videoconference environment more time consuming. Add more time to your agenda to insure that activities are developed fully.
- *Monitoring:* During activities it is typical to see an instructor wandering about the room checking progress and answering questions. Videoconferencing makes it difficult for instructors to do this. Think of alternative methods to make yourself available during activities, either by setting up checkpoints with the groups, providing a phone

number where you can be reached, or by remaining present on the screen and having participants approach you with questions.

Discussions

- *Determine protocols:* Depending on the number of participant and the number of overall classroom sites, you may choose to adopt certain protocols to help you maintain an organized discussion. For example you may decide to have each group discuss the questions at their individual sites before discussing it as a large group. You may also decide to have each person raise their hand before making a comment to insure that the camera is focused on them and their microphone is turned on.
- *Encourage participation:* Instructors often use eye contact or their physical presence to encourage participation. This can become difficult given the constraint of the medium, but can be overcome by calling on each site to share their responses or by establishing protocols for sharing.
- *Add more time:* Based on added protocols, give participants additional time to think about and respond to the question.
- *Recording responses:* When recording responses make sure it is done in a method where all participants can view it. If available you could use a document camera, or simply have a camera focused on a white board or flipchart.

Supporting Visuals

Many instructors use computer projected media such as PowerPoint to reinforce their presentations. Special consideration needs to be taken when using this type of media over videoconference.

- *Use a minimum of 40-point type font:* Due to the compression necessary to take a VGA signal to video the amount of data is cut in half. Because of this a 40-point type font on a VGA monitor will look more like a 20-point font when converted to video.
- *Keep it simple:* Avoid putting an excessive amount of information on your slides. Try to limit each slide to 25 words or less.
- *Avoid red, deep blue, and orange:* These colors tend to "smear" when viewed through video.
- *Allow more time:* Due to the potential for a slight transmission delay, give your participants additional time to view your visuals.
- *Test:* Prior to the session review your presentation through the video to identify any problems that may occur due to the video compression.

Instructor Delivery Skills

As with any classroom training the focus resides largely on the instructor. Because of this, it is important to demonstrate confidence in your delivery skills and avoid any action that detracts from your message. The following are some lessons learned that will help you achieve this.

- *Eye contact:* Be aware of your eye contact with local and remote participants. Give them all equal attention and eye contact. Practice to become comfortable speaking into the camera.
- *Stay on camera:* Be aware of your field of movement in the camera frame. Tape off your speaking area so that you do not inadvertently move out of the camera's range. In addition, if you are using a close-up camera shot, keep in mind that a slight movement can take you out of the camera's range.
- *Distractions are magnified:* Due to the camera, any distracting gestures or movement will seem magnified to the participants.
- *Maintain proximity*: Set the camera preset so that your face is in the upper one-third of the monitor and the bottom edge lands somewhere between your wrists and your elbows. Anything farther will make you seem too far away and anything closer will seem amplified.
- *Keep it lively and moving:* When presenting, be sure to move around. Allow the camera to follow you around the room or use camera presets to move to different locations. Remember how boring it would be for you to watch the same picture on TV for two hours.

Including these elements improves the quality of your instruction, regardless of the delivery medium. Videoconferencing, in its present form, allows for communication and interaction between participants and in efficiencies in delivering instruction. The design principles supporting quality face-to-face instruction still hold true for instruction delivered via videoconference. Sound instructional design supports sound instructional products, regardless of the techniques, or technology employed.

Biographical Sketches

Stephen Smith's professional goals include enhancing the effectiveness of learning. As an instructional designer, his work revolves around meeting the knowledge and learning needs of Arthur Andersen's line professionals. Delivering instruction via videoconferencing creates the possibility of improving instruction and breaking down time and space barriers to learning. Steve's presentation background includes a presentation at the 1999 ISPI Conference, 1999 AECT Conference, professional classroom delivery at Arthur Andersen Performance and Learning courses, doctoral studies and teaching at Indiana University, and designing effective instructor-led and internet-based instruction and communication.

Address: 1750 E. Main Street
St. Charles, Illinois 60174
E-mail: Stephen.E.Smith@US.ArthurAndersen.com

Stephen Boyd's professional work deals with helping people communicate effectively. Arthur Andersen professionals turn to Sid to improve their communication skills. Sid's groundbreaking work with audience-specific communication skills, help people with what they *"really do at work."* Shackled by pre-packaged solutions geared toward ideal audiences, Sid develops customized communication solutions for a wide-range of clients ranging from stuffy auditors to brainy tax advisors. Sid's professional background include teaching communication and speech classes at Miami University of Ohio, instructor preparation and coaching with Arthur Andersen Performance Consulting, and working to increase communication skills in distance education environments.

Address: 1405 N. 5th Avenue
St. Charles, Illinois 60174
E-mail: Stephen.Boyd@US.ArthurAndersen.com

Using Multiple Support Strategies to Build Programming Abilities in a Technical Workforce

Julie L. Strey Johnson
Senior Instructional Technologist
Johnson Controls, Inc.

Dave Haskett, Manager
Learning Design and Development
Johnson Controls, Inc.

The Situation

Our technical employees must create, modify and troubleshoot product databases using a proprietary programming language. These databases provide the reference tables that tie our software and hardware products together. Without this programming capability in our workforce, our business will fail. In recent years, increased expansion and turnover have meant increasing numbers of new hires—more than doubling the demand for training and exceeding our capability to provide classroom training. Class schedules and travel budget limitations further restricted the number of individuals that were able to attend courses to learn this programming language.

The initial plan was to change our existing classroom-based training to a self-paced distributed method. However, a closer look at the existing training revealed major job performance problems. Results of the classroom learning were unpredictable; learners were limited in the amount of time they could spend on lab practice sessions, and many learners did not master these critical job skills. We needed to provide greater access to this learning for our geographically dispersed audience, cut costs, and most importantly ensure mastery of critical business skills. We needed a new solution!

The Solution

Our analysis revealed the need for a *unique combination approach* to meeting our business and performance development needs. Our cross-functional project team conceived and produced an innovative, hybrid performance intervention as the best response (Table 1).

This hybrid performance intervention, which combines a paper-based learning module with hands-on lab exercises, local coaching and professional instruction from a distant instructor, has proved to be an efficient way to effectively build job-critical skills in our technical employees.

Why This Solution?

The Practice incorporates the flexibility of self-paced instruction; the communication power of modern technology; and the assessment, reinforcement and feedback unique to live instructor-learner interaction. This combination is able to address the problems of skill mastery, access, efficiency and effectiveness that impacted classroom delivery of this learning.

Table 1

Need	Practice Response
Access to learning for an expanded audience	• Distributed learning • Flexible scheduling (self paced) • No limits on the number of students
Reduce Costs	• Eliminate student travel costs
Mastery of Critical Skills	• Systems approach to instructional design was used as the best way to apply adult learning research to achieve the needed work performance.
Support & simplify job performance	On-the-Job Support Strategies: • Program templates to improve process efficiency. • Programming job aid. Reduce potential work process errors.
Overcome traditional isolation and frustration of distance learners.	Supportive Learning Environment: • Learning Contract • Coach • E-mail and phone contact with instructor • Management commitment

Skill Mastery

In keeping with industry established strategies for learning a complex procedure, the learning involves a didactic, expository approach. The steps of the process are chunked into stages. Each lesson presents the material for a stage, provides for practicing that stage with job related tasks, and provides feedback. Using this approach, the learner works through the module and simultaneously creates all files needed for an actual job.

Learning to program and debug actual files is a solid start in mastering job skills. However, the learner must also transfer the newly learned skills to the job situation. The final project in this Practice makes this link. It consists of two parts: programming a job and writing about an experience where the newly learned skills were applied. In other words, the final project simulates the actual work environment.

Access

Using classroom training we could serve only 200 students per year. In recent years increased expansion and turnover have generated increased numbers of new hires–more than doubling the demand for training and exceeding our classroom training capacity. By moving from a classroom to a self-paced distributed approach, access was increased. There are no current over-subscription issues. Furthermore, the learning is not limited to new hires. Experienced employees are using it to develop and improve their skills. (This larger audience is being served at lower costs.)

Efficiency

To continue to excel in a competitive environment, the organization attempts to glean efficiency in anything it does. Efficiency in learning refers to making the best use of resources, such as experts and instructors, producing more results with fewer steps in a process, and delivering learning at the point of need, at the time of need.

- A "library" of files is always used as a starting point, eliminating the need to start from a blank screen and create syntax line by line. Learners are encouraged to use this library as the starting point for all future work with this programming language. This is a highly efficient way to learn, and to work.
- The "DOS commands job aid" addresses a skill gap identified during the analysis. The job aid is an efficient way to support performers, not just in the learning, but on the job as well.
- Using local coaches capitalizes on the expertise housed throughout our field organization.
- While the primary focus of the Practice is learning how to program using a particular software language, the Practice simultaneously outlines a process for creating a job from the "library" files. In the course of defining this process, information was pulled from several disparate sources, including multiple sources of product documentation and technical literature. The use of this standard process reduces the time it takes to create a job.

Effectiveness

A lack of effectiveness of the learning was another element identified during the analysis of this project. Traditional classroom instruction produced unpredictable results. Not all students mastered the content, or even comprehended some of the basic concepts that support the programming language and process. The Practice addresses effectiveness using several techniques.

- All students must demonstrate mastery of the skill in order to receive credit for completing the Practice.
- The use of a local coach and a professional instructor improve the effectiveness of the Practice. The Coach, usually a co-worker who is familiar with the programming language, provides a "local" perspective and insight into local customs, customer expectations and procedures. Professional instructors evaluate the final project and provide feedback to the learner from an "impartial expert."
- The "library" of files that is part of the Practice provides "correct" code models and serves to increase the effectiveness of the learning. Rather than getting "bogged down" in the details of creating code from scratch, learners can concentrate on major concepts and procedures critical for success.

The ability to program in a proprietary computer language is a foundation skill for our technical workforce. The Practice provides a way for learners to master this critical skill. Furthermore, the

Practice resolved problems of access, efficiency and effectiveness that had plagued prior attempts to deliver this learning.

Evaluation

Learner reaction data were collected from 45 field test subjects using an evaluation form and one-on-one interviews. High marks were received for usefulness, thoroughness, organization, content accuracy, and timeliness. Many positive comments were also collected.

Learning was measured by comparing pre and post intervention skills using a job simulation. There were 91% first time masters. The instructor provided feedback and remediation (a previously unavailable option) that resulted in mastery for all learners.

The Practice was definitely a success! At the beginning of the study, learners were unable to perform critical job tasks. Upon completion of the Practice, learners had mastered skills needed on the job. Interviews conducted before and after exposure to the Practice provided further evidence of the change in skill level. By adhering to the solid principles of instructional design, evidence was gathered to support the design and delivery method of the Practice. This evidence proved to be critical to the adoption of the Practice, producing a variety of supporters and adopters. The Practice was now ready for use by the intended audience.

Practice efficiency was compared to classroom training. Approximately $1,000 in travel costs are avoided for each Practice student. Actual time spent on the learning has not changed much from the classroom training. The average completion time for the Practice is 38 hours compared to a one-week course. As noted elsewhere there has been significant improvement in skill mastery for the same time investment.

Continuous evaluation is a part of the standard instructional design process used by the organization and is integrated with the deployment of this Practice. Reaction and learning data is gathered for each learner. Indications of job transfer are collected using supplemental feedback sessions with various learners and supervisors on a regular schedule. We are also starting to tap into data from a performance based certification program that is being deployed. Revisions to the Practice have been made based on the evaluation data and it is our plan to continue revisions throughout the life of the Practice.

Lessons Learned

The Practice provides a technologically simple distance learning model for use in dealing with performance deficiencies in a technical audience for skills previously learned in the classroom. It demonstrates how concepts and processes (programming skills) can be effectively and efficiently learned by integrating multiple strategies. Any organization with access to telephones and electronic mail could implement this practice. Lessons learned from designing and implementing this Practice are described below.

Instructional Management

- **Conduct appropriate analyses before making media and methods decisions**. One of the goals of this project was to change the delivery strategy of an existing classroom training to self-paced distributed methods. In light of the current technology trends, the temptation was to use the Internet/Intranet as the main delivery method. Fortunately, the learning environment analysis revealed that learners' access to the Intranet was unstable. The task analysis revealed that the programming language does not run in a Windows environment. Not only was the Intranet unrealistic, but references to electronic documentation would also be inappropriate. These findings influenced the media selected for this Practice.
- **Apply strategies for change management when introducing new approaches to learning.** The long-term acceptance of using classroom learning for development of these skills created an obstacle for the Practice. If a learner attends a class, the supervisor acknowledges a commitment to learning—the learner is away from the work environment and can focus on the learning event. The Practice uses distance learning techniques—learning occurs without travel to a learning center. Finding time for learning amidst the demands of a workday is challenging. A Learning Agreement was generated to address this issue. The Learning Agreement is signed by the learner, the coach and the learner's supervisor. This agreement opens the lines of communication between the parties involved, making all aware of the commitment needed to complete the Practice.

Instructional Design

- **Address ancillary learning**, but only to the extent that the goals of the Practice are not compromised. A gap in skills and knowledge related to DOS commands was identified during the analysis. Although not part of the project goals, this need could not be ignored. In keeping with the principle of giving performers what they need, when they need it, a job aid of DOS commands was created for this module, since the proprietary programming language runs in DOS. This job aid addressed the gap related to DOS commands, allowing the primary goal of the Practice to be accomplished.
- **The feelings of isolation associated with distance learning can be removed.** The Practice involves the use of a Coach to provide immediate evaluation and feedback to the learners. Working with a coach provides the "human touch" and interaction that many people prefer in a learning event. Additionally, an instructor is available via telephone and e-mail.
- **Hold learners accountable for completion.** Initial learners reported that they did not have access to the equipment needed to complete the lab assignments. Since the required equipment is standard in every office, the reports from learners were perplexing. Further questioning of the learners revealed that learners were not asking for assistance in locating the equipment. Two interventions were added to address this problem: a Learning Agreement and a Coach.
- **Reinforce transfer to the job.** Feedback sessions with learners indicated that they did not fully grasp the importance of this skill on the job. This gap was resolved by adding

a practical exercise in which the learner works with the Coach to use the programming language on the job.

Evaluation

- **Multiple data collection and evaluation techniques are essential for confident conclusions.** Numerous adjustments were made to the Practice as a result of feedback from learners. Only through the use of multiple feedback techniques can issues and ideas be identified and clarified.

This approach to learning is worth replicating. The issues faced by this design team are commonplace in industry. Many of the problems that plague self-paced learning can be reduced by involving a coach, providing a smooth transition from the learning environment to job tasks, and requiring accountability. This Practice is a solidly designed hybrid approach, which incorporates the flexibility of self-paced instruction, the communication power of modern technology, and the assessment, reinforcement and feedback unique to live instructor-learner interaction.

The Practice is currently available to all internal audiences that have job requirements that involve use of this programming language. In the near future, the Practice may be made available to our external audience (customers). The distance learning model provided by this Practice is being considered for use with other content.

About Johnson Controls, Inc.

Johnson Controls is a global market leader in automotive systems and facility management and control. In the automotive market, it is a major supplier of seating and interior systems, and batteries. For nonresidential facilities, Johnson Controls provides building control systems and services, energy management and integrated facility management. Johnson Controls (NYSE:JCI), founded in 1885, has headquarters in Milwaukee, Wisconsin. It's sales for 1999 totaled $16 billion.

Biographical Sketches

Julie Strey Johnson, Senior Performance Technologist at Johnson Controls in Milwaukee, serves as a liaison with internal audiences to identify performance interventions that result in valid business results. She has 7 years of experience and education in solving performance problems for technical audiences. Ms. Strey Johnson holds a Master of Education in Curriculum and Design from Marquette University, Milwaukee.

Address: Johnson Controls, Inc.
507 East Michigan Street
Milwaukee WI 53202
E-mail: julie.strey@jci.com
URL: johnsoncontrols.com
Phone: (414) 524-4072
Fax: (414) 524-4274

Dave Haskett, Manager of Learning Design and Development at Johnson Controls in Milwaukee, leads a team of performance technologists, instructional designers, and production specialists developing a curriculum to address the competitive challenges of gobalization and technological evolution. He has over 25 years experience, education, and leadership in solving human performance problems in government, higher education, and industry. Mr. Haskett holds a Master of Education in Instructional Technology from the University of Missouri.

Address: Johnson Controls, Inc.
507 East Michigan Street
Milwaukee WI 53202
E-mail: david.r.haskett@jci.com
URL: johnsoncontrols.com
Phone: (414) 524-5092
Fax: (414) 524-4274

Evaluation to Strengthen Distance Learning Programs

Kay S. Taube, Assistant Dean
University of Wisconsin-Extension

Barbara Burrell, Associate Professor of Political Science and
Associate Director of the Public Opinion Laboratory
Northern Illinois University

Sharon R. Nellis, Coordinator of CNP
University of Wisconsin-Madison

Patricia A. Lasky, Interim Dean of Nursing
University of Wisconsin-Madison

Introduction

The Collaborative Nursing Program (CNP) is a joint effort of the nursing programs at five University of Wisconsin campuses: UW-Eau Claire, UW-Green Bay, UW-Madison, UW-Milwaukee, and UW-Oshkosh. It was developed in response to a 1993 needs assessment study conducted by the Wisconsin Survey Research Laboratory, a unit within the Continuing Education Extension Division of UW-Extension. This study, which employed weighted sampling techniques, found an estimated 9,000 Registered Nurses in Wisconsin who were interested in using distance learning technologies to complete a baccalaureate nursing degree.

The CNP is offered through distance education technologies and the combined resources of the five UW nursing programs, with additional support and facilitation provided by UW-Extension. One of the University of Wisconsin System's first collaborative distance education programs, the CNP has been available to Registered Nurses since spring semester 1996. Courses are offered by several technologies -- audiographics, compressed video, public television, WisLine[1] telephone discussion sections, and, since spring semester 1998, Internet courses – making it possible for nurses to remain in their communities and on the job while completing a baccalaureate degree.

CNP students affiliate with one of the five participating UW institutions (Eau Claire, Green Bay, Madison, Milwaukee, or Oshkosh) which becomes their *home institution*—the place where they are admitted, register for classes, apply for financial aid, receive advising and other student services, and ultimately are awarded their degree. As of May 2000, over 100 nurses have graduated from this program, although at the time of this study, about 60 nurses had graduated. Around 150 students are enrolled in one or more nursing courses in any given semester. Nurses who are taking only general education courses do not appear in CNP enrollment totals for that semester. Students are predominately white and predominately female, highly motivated, and geographically bound. Most (48%) CNP students are in the 40s age grouping and work in acute care settings (55%).

---

[1] WisLine is a telephone conference service available to Wisconsin educational, governmental, and non-profit groups.

During the fall semester 1998, the Office of Learning and Information Technology (OLIT), UW System Administration agreed to fund an evaluation study of the CNP to learn more of these students experiences with learning technologies. The study explored four broad features of the program:

- Issues of cost and access
- Technologies and learning modalities
- Availability and quality of support services
- Impact of the program on nurses' careers.

Approach

The Wisconsin Survey Research Laboratory (WSRL) was hired to conduct a two-phased evaluation study. Phase one (March 1999) consisted of focus groups, one held at Madison with Eau Claire participants linked to this group by compressed video; the other met in Appleton. Participants were eleven randomly selected recent graduates (Eau Claire/Madison group) and five randomly selected current students (Appleton group). Information obtained from focus group interviews shaped and informed the development of the written survey instrument, ensuring that issues students considered important were included in the survey questions.

For the second phase of the study, written survey instruments were mailed to all (387) CNP[2] students and graduates in order to assess the quality and impact of the program. An initial and two follow-up mailings were completed between July and November 1999. Of the entire sample, 231 returned questionnaires for a response rate of 60%.

Members of the CNP Steering Committee[3] and the director of OLIT reviewed preliminary focus group scripts and draft written surveys with staff of WSRL, recommending some changes in both to more appropriately reflect the program or their evaluative interests in it.

Findings

Across all four areas of the study, current and past CNP students rate the program highly while identifying some areas for strengthening and improving the program.

Issues of Cost and Access

Nurses are choosing the CNP because of the program's flexibility (97%), availability at convenient distances from home or work (94%), because credits transfer easily (88%), because of the reputation of the University of Wisconsin (82%), because of program costs (79%), due to information obtained from an advisor (70%), a lack of other options (51%), or from a colleague's recommendation (44%).

---

[2] Eligible subjects were those who had taken one course or more in the CNP prior to the spring 1999 semester.

[3] The CNP Steering Committee is comprised administrators/faculty representatives from each of the five UW institutions with nursing programs. A UW-Extension representative serves as the group's convener/facilitator.

Respondents were asked about the usual and the farthest distances they traveled, one-way, to attend CNP classes. The average *usual* distance traveled was 23 miles while the average *farthest* distance was 37 miles. On average, respondents lived 61 miles from their home institution, with responses ranging from one mile to 346 miles. About 20% of CNP students lived 100 or more miles away from their home institution.

When asked to compare the value of the education to its costs, nearly three quarters of CNP students reported the value was equal to or greater than the cost of the program. While 83% of CNP students used personal funds to finance their education, 57% of respondents reported they received either full or partial reimbursement from their employer. 13% of CNP students received scholarships or grants and 8% took out loans.[4]

Technologies and Learning Modalities

Almost 85% of respondents reported they had access to a computer at home or at work. As age increased, access to computers at home or work increased, with 91% of those 50 or older having access to a computer. Most of those with computer access (80%) had PCs; the remaining 20% had Macintosh computers. 70% of respondents had Internet access[5], 81% had CD-ROM drives, and 32% had computers with video-audio play capacity.

Most of the CNP courses were offered via audiographics, with the first of the Internet courses, an elective, introduced during the spring semester 1997. An Internet version of a core (required) course was first available spring semester 1998. **Ninety per cent** of survey respondents had taken audiographics courses, 60% had taken compressed video and/or television courses, and half had used WisLine or the Internet. Television was ranked as the *easiest* technology to use (90%), followed by WisLine (78%), audiographics (76%), compressed video (74%), and the Internet (71%). However, when asked to rate each of the technologies according to *effectiveness* as a way to learn, an inverse relationship appears; the Internet was rated good or excellent by 85%, followed by compressed video (72%), television (71%), audiographics (66%), and WisLine (63%). The Internet was also identified by most respondents as their preferred (first choice) of learning technologies.

Learners were most pleased with the technical support provided for the Internet (84%) and least satisfied with the technical support available for compressed video (68%). They were most pleased with the orientation given for the public television course (78%) and least satisfied with the orientation to compressed video (57%).

---

[4] About 40% of CNP students reported more than one source of funding for their education, e.g., a combination of employer reimbursement of tuition and personal funds for texts and travel.

[5] In a 1997 survey, only 43% of CNP students had Internet access.

Availability and Quality of Support Services

Advising (for information on courses, program planning, financial aids, and other information) was the most highly used support service (75%). About 25% of respondents report using either the Independent Learning Bookstore or HELP[6] advisors for information about courses, financial aids, or other information. Respondents use of other support services was low; computer labs at their home campus (17%), orientation tours of the home institution library (15%), computer labs at distance learning sites (12%), orientation tours of their home institution (10%) and contacting Learning Innovations or campus staff for help with on-line courses (9%). Only 7% of respondents report using the Distance Education Clearinghouse website for maps and directions to classes and 4% say they used the Clearinghouse website to download book order forms.

Respondents were asked about use of on-line library services made available to them through Wisconsin Interlibrary Services (WILS). Services used included on-line database searches (62% report using), reading on-line journal articles (52% used), requesting books or articles through inter-library loan (28%), and requesting an orientation to electronic library services (16%).

From a list of potential problems/issues, respondents were asked to identify which they thought were problems for CNP students. 32% cited parking as a possible problem/issue, 26% cited travel to course sites, 18% cited transferring credits, 9% child care, and 7% safety concerns.

When asked to identify positive aspects of the program (open-ended question), 38% noted convenience and flexibility, 23% helpful advisors, 17% reduced travel time, 14% earning a degree, 13% use of technology, and 13% meeting nurses from other parts of the state. 90% of respondents identified at least one positive aspect of the CNP.

Asked to identify least helpful aspects of the CNP (another open-ended question), 17% cited technical difficulties, 12% identified course scheduling, 11% cost, another 11% said transfer of credits, and 9% cited lack of personal contact with instructors. 81% of respondents identified an unhelpful aspect of the program.

Impact of the Program on Nurses' Careers

Nearly 8 out of 10 respondents reported feeling more satisfied with their nursing careers and about 75% felt more confident in nursing skills as a result of participation in the CNP. Less than one-fifth of respondents reported increased job responsibilities, promotions, salary increases, changing employers or changing their area of practice that they could attribute to participation in the CNP[7].

---

[6] Higher Education Location Program, a toll free, systemwide telephone advising service, providing information for all campuses in the University of Wisconsin System.

[7] Since the survey instrument did not ask respondents whether they were still enrolled in the program or graduates, we were not able to cross-tabulate responses to this question for grads and those currently enrolled. We would expect to see stronger impacts on the nurse's career *after* completion of the baccalaureate degree.

When responses are examined by age of respondents, nurses in their 50s or older were more likely to report increased confidence; 90% of respondents over age 50 reported increased confidence in nursing skills, compared to 71% of people in their 20s.

CNP students were asked about future plans. Over half of respondents (52%) said that as a result of obtaining a baccalaureate degree in nursing they intended to pursue a master's degree. 31% anticipate changing areas of nursing, 27% changing jobs, and 10% anticipate moving into administration.

Summary

The study revealed a very high level of satisfaction with the program. Across all indicators, current and past students rate the CNP highly. While most students are contributing to the cost of their educational experience, 57% are receiving partial or full reimbursement from employers. It is viewed as a good value by learners. Nurses find the technologies easy to use and effective ways to learn, with Internet courses emerging as a clear favorite. Orientation and technical support for the technologies were rated highly and most respondents reported they would recommend the CNP to a colleague. Advisors perform an important role with CNP students and are the most utilized of a variety of support services. A large number (52%) of respondents said they intended to pursue a master's degree. Few students have yet noticed a major impact (promotion, job change, increased salary) they can attribute to participation in this program.

Several areas for change emerged. The clear preference for Internet courses, combined with increasing numbers of students having Internet access, support further Internet course development. Students noted concerns about technical difficulties and orientation to some of the technologies. Travel and campus parking also emerged as areas of concern. Based on this study, the CNP Steering Committee has committed to offering an all Internet program.

References

Burrell, B. (Summer 1993). *Registered nurses educational needs survey*. Report Prepared by the Wisconsin Survey Research Laboratory, University of Wisconsin-Extension.

Sloan, M. (June 1999). *Collaborative nursing program evaluation*. Report prepared by the Wisconsin Survey Research Laboratory, University of Wisconsin-Extension.

Sloan, M. & Yun, E. (March 2000). *Collaborative nursing program evaluation.* Report prepared by the Wisconsin Survey Research Laboratory, University of Wisconsin-Extension.

Wisconsin Survey Research Laboratory. (October 1999). *Collaborative nursing program Evaluation, preliminary data.*

Biographical Sketches

Kay S. Taube is Assistant Dean for Collaborative Programs with the Continuing Education Extension Division, University of Wisconsin-Extension. She has worked with the Collaborative Nursing Program during its formulation and implementation, continuing to serve as a facilitator for this program. She is involved with several other collaborative ventures within the UW System.

Address: University of Wisconsin-Extension
432 N. Lake St., Rm 401
Madison, WI 53706-1499
E-mail: taubeks@conted.uwex.edu
Phone: (608) 262-7277
Fax: (608) 262-8205

Barbara Burrell is an Associate Professor of Political Science and Associate Director of the Public Opinion Laboratory at Northern Illinois University. She was formerly head of the design Section of the Wisconsin Survey Research Laboratory, University of Wisconsin-Extension. She is the author of several books on women and politics.

Address: Public Opinion Laboratory
Northern Illinois University
DeKalb, Illinois 60115
E-mail: T10BCB!@wpo.cso.niu.edu
Phone: (815) 753-9657

Sharon R. Nellis, Coordinator of the UW Collaborative Nursing Program, holds a Masters in Public Administration from Pennsylvania State University and a BA in Personnel Administration. She is the Student Services Coordinator with the UW-Madison School of Nursing, serves as Associate Coordinator of the WisTREC program, and is a member of the UW-Madison School of Nursing Informational Technology Committee and the ISIS (PeopleSoft) Implementation Committee. She has presented both regionally and nationally at distance education and advising conferences.

Address: School of Nursing
UW-Madison
K6/230 Clinical Science Center
600 Highland Avenue
Madison, WI 53792
E-mail: srnellis@facstaff.wisc.edu
Phone: (608) 263-5167
Fax: (608) 263-5332

Patricia A. Lasky, Interim Dean, is also an Associate Dean and Professor in the University of Wisconsin-Madison School of Nursing. She holds degrees from Marquette University (BS) and the University of Wisconsin-Madison (MS and PhD). Pat has been instrumental in developing the

Collaborative Nursing Program. She has written several articles and presented to many groups about the CNP.

Address: School of Nursing
UW-Madison
H6/150 Clinical Science Center
600 Highland Avenue
Madison, WI 53792
E-mail: palasky@facstaff.wisc.edu
Phone: (608) 263-5155
Fax: (608) 263-5323

Standardizing Project Management Practices Using Distance Learning Training to Train a Global Workforce: Getronics Virtual University's Crowning Achievement

Dan Tobin, Ph.D., Dean
Getronics Virtual University

Tina J. Parscal, Academic Dean
ISIM University

Abstract

Getronics is worldwide provider of Information and Computer Technology solutions and services, with more than 34,000 employees working in 44 countries around the globe. The company has grown through multiple acquisitions, most recently of Wang Global (where the corporate university had its roots). The company determined that it needed to establish a project management curriculum with three major goals:

- To raise the general level of project management competence within the company.
- To introduce a company-wide standard methodology for project management.
- To help selected employees become certified by the Project Management Institute.

The company's chosen training path includes self-paced materials to introduce project management concepts and tools; a week-long seminar to raise the level of project management competence and to introduce the company's standard methodology; and a series of asynchronous distance learning courses, provided by ISIM, to prepare selected employees for the Project Management Institute's (PMI) Project Management Professional (PMP ®) certification examination.

Introduction

Getronics Virtual University recognized a need to raise the general level of competency of project management within the organization, standardize project management training for its global workforce, and assist qualified employees to secure the Project Management Institute's (PMI) Project Management Professional (PMP®) certification. Responding to this need, Getronics developed a training strategy that deployed an appropriate mix of pedagogical techniques and delivery media including instructor-led seminars, CD-ROM, CBT, and asynchronous distance learning.

Organizations invest billions of dollars annually for education and training. (Baldwin and Ford, 1988). Outsourcing the training was identified as the most cost-effective route for Getronics. However, while researching potential vendors for project management training, Getronics determined that typical facilities-based college project management programs required an investment of 12-20 days of full-time classroom instruction, tuition of $6,000–$10,000 per student, as well as time off the job and travel and expenses. These factors led Getronics to explore distance learning alternatives for providing the required training.

Program Description

The project management training program blends self-paced computer-based-training (CBT), instructor-led seminars, and facilitated asynchronous web-based distance learning.

Phase I: Self-paced study. Getronics provides a lending library of self-study materials on project management for employees to check-out a for one-month period. Through the use of books, CD-ROM, and CBT, this first phase of the project management training program provides a general overview of project management and Microsoft Project ™. This phase is available to all Getronics employees.

Phase II: Jumpstart seminar. The "Jumpstart" seminar, developed in cooperation with a leading private university lasts five days, is classroom-based, and customized to Getronics's methodology and business. Participants in the seminar are introduced to the Getronics's proprietary "systemscraft" methodology. This methodology includes developing an understanding of specific spreadsheet templates, procedures, and company-wide project management standards.

The Jumpstart seminar is offered ten times annually in the United States and once a month in Europe and Asia. There are an average of 20 participants in each seminar. Employees, who have completed Phase I, may nominate themselves to participate in the Jumpstart program. The employee's manager must approve the nomination.

Employees who complete Phase II and have been identified as candidates for the PMP® certification, may proceed to Phase III once they have achieved the 4500 hours of experience required by PMI or are within six months of fulfilling the experience requirement.

Phase III: ISIM Internet-based project management courses. Getronics employees who have fulfilled or are within six months of fulfilling the experience requirement and are eligible for the Project Management Institute's PMP® certification, take two distance learning courses offered by ISIM University. As a Project Management Institute Certified Education Provider, ISIM's Project Management Program is approved by the PMI and prepares the student to take the Project Management Professional (PMP®) Certification exam. The PMP® credential is the project management profession's most globally recognized and respected certification credential.

The two courses, Project Management Organization Framework and Project Management Integration Framework are each eight-weeks in length, facilitated by a PMP certified expert faculty and address the knowledge areas presented in PMI's *A Guide to the Project Management Body of Knowledge*. Both courses are delivered via web-based, asynchronous, interactive distance learning. Each course has 12 to 18 participants and requires each participant to invest 8 to 12 hours per week on learning activities. The average participant spends three to five of those hours online interacting with his or her peers and facilitator, posting assignments and taking the module online quiz.

Normally, the Project Management Organization Framework and Project Management Integration Framework courses are preceded by the Project Management Essentials course. Given the fact that all Getronics learners must complete the Jumpstart seminar before beginning the distance learning component in Phase III, ISIM prepared an equivalency exam for the Project Management Essentials course to determine if the Jumpstart program adequately prepared students for Phase III, the distance learning component. Fifty individuals who completed the Jumpstart course were administered the equivalency examination. All fifty learners passed the examination with a score of 80 % or higher. Given these results, it was determined that the Jumpstart seminar adequately prepared learners for the distance learning courses in Phase III.

Most of the Getronics learners in the distance learning component have had little to no experience with online distance learning. Research indicates that a key determinant of success in a distance learning program is providing adequate orientation and support (Eastmond, 1995 and Wiesenberg and Hutton, 1995). Therefore, before starting in the first distance learning course, all participants are required to complete a *Learn-to-Learn* module, Module 0: Successful Online Learning. This one-week module orients learners to the features and functions of the distance learning platform, prompts learners to identify potential obstacles that may hinder completion and develop a strategy to overcome any obstacles, and facilitates the learners examination of her/his learning style as it relates to the distance learning environment.

Phase IV PMP® exam preparation. Participants who complete both online distance learning courses return to the self-study mode in Phase IV to prepare for the PMI's PMP ® certification examination. The exam prep materials are a commercially available CD-ROM package that may be borrowed from the Getronics Virtual University lending library. Employees are required to independently join PMI and fund their own membership and examination.

Discussion

Since launching the program in 1999, over 50 Getronics learners have completed through Phase III. Many of these learners are in Phase IV with 12 having made application for certification. Currently, Phase III has a completion rate of over 80%. This can be attributed to several factors including thorough preparation and screening of participants, effective orientation through the *Learn-to-Learn* module, the convenience of online distance learning, and the facilitative nature of the learning experience. Dede (1996) described how well designed online learning assists the knowledge construction by illustrating the links between information and by supporting unique learning styles. Through the *Learn-to-Learn* module, participants identify their individual learning style in relation to the online learning environment. Furthermore, peer-to-peer and participant-to-facilitator dialogue is an important part of the Getronics distance learning experience. Dialogue coupled with structure (the responsiveness of the content to the learner's needs) greatly reduces the transactional distance (perceived interpersonal distance between geographically dispersed learners) in the learning environment (Moore, 1990). The success of a distance learning program is directly related to the degree of dialogue within the program and the level of transactional distance (Moore, 1991). Participants in the Getronics online learning environment gain the value of peer-to-peer learning; that is, the informal and professional learning occurs in a formalized setting when professionals with common interests and goals convene.

Given the international scope of Getronics, the need to localize training is paramount. The most immediate need for this was in South America. ISIM University located and trained a PMP certified professor in Chile who facilitated the online courses for the South American group of learners. This enabled the learners to hold their online discussions and remit assignments in Spanish. An added benefit to this process is the PMP® certification examination is administered using both English and Spanish on the exam.

Overall, the identified benefits of the online distance learning component of Getronics's Project Management training include:

- Cost per student less than $3000 versus average of $8000 for land-based college programs.
- Tailoring the courses to Getronics's own business and methods
- Localizing instruction by offering courses in several languages
- 24 hours per day, seven days a week availability of the learning environment
- Gathering a global group of learners into one learning environment
- Allowing individuals to learn at their own pace
- Interacting on a student-to-student and student-to-instructor/facilitator level
- Providing insightful feedback from expert faculty and fellow employees in real-world situations
- Allowing for and encouraging immediate use of newly acquired skills and techniques on the job

Evaluating the Getronics Virtual University's Project Management program reveals that the program has done well to achieve its stated goals. Completion rates and course evaluations have indicated a high degree of learner satisfaction with the program. Future studies will assess the effectiveness of the program monitoring the number of students that ultimately receive the PMP ® certification.

References

Baldwin, T. & Ford, J. (1988). Transfer of training: A review and directions for further research. *Personnel Psychology 41*, 63-105.

Dede C. (1996). Emerging technologies in distance education for business. *Journal of Education for Business 71*(4), 197-204.

Eastmond, D. V. (1995). *Alone but together: Adult distance study through computer conferencing*. Cressill, NJ: Hampton Press.

Moore, M. (1990). Recent contributions to the theory of distance education. *Open Learning* 5(3), 10-15.

Moore, M. (1991). Distance education theory. *The American Journal of Distance Education*, *5*(3), 36-57.

Wiesenberg, F., & Hutton, S. (1995, November) *Teaching a graduate program using computer mediated conferencing software*. Paper presented at the Annual Meeting of the American Association for Adult and Continuing.

Biographical Sketches

Dan Tobin is the corporate training director for Getronics, an international information and communications technology services company doing business in 44 countries, and Dean of Getronics Virtual University. He has more than 25 years of experience in the training and education field. Dr. Tobin has earned a master's degree from the Johnson Graduate School of Management and a Ph.D. in the economics of education, both from Cornell University. He is an adjunct professor in the graduate management program of Boston's Emmanuel College.

Address: Getronics
290 Concord Road
Billerica, MA 01821
E-mail: dan.tobin@getronics.com
Phone: (978) 625-7221
Fax: (978) 625-7220

Tina J. Parscal is the Academic Dean for ISIM University, where she is responsible for all distance learning including graduate degree and executive education programs. Ms. Parscal has earned a Master of Social Science with an emphasis in adult education from the University of Colorado, Denver. She has done research and numerous presentations in the areas of learner-centered pedagogy for distance learning and traditional classroom environments, web-based instruction and learning outcomes assessment. She is currently a doctoral student in Adult Education at Capella University.

Address: ISIM University
501 South Cherry Street, Room
Denver, CO 80246
E-mail: tparscal@isimu.edu
Phone: (303) 333-4224, Ext. 185
Fax: (303)336-1144

Instructional Designs/Strategies for Teaching/Learning via Two-Way Interactive Television in a Multicultural Setting

Audrey M. Turner, Professor
Kennedy-King College

"Two-way interactive television allows us to share each other" was the most salient learning theme throughout a qualitative participant observation multiple-case study conducted in the City Colleges of Chicago (CCC). The study was conducted over three sixteen-week school semesters, involving as many as three sites online. Each semester was considered a case-study within a larger case-study. The teacher/participant observer and thirty-two students/participants were engaged in teaching and learning in an Educational Psychology class, a class that served to fulfill one of the requirements for teacher certification in the state of Illinois . The principal sources for data were the teacher/participant observer and students/participants. In-depth interviewing was the principal data collection method, augmented with several qualitative and quantitative data collection methods.

Ms. Christine Royal, a student-participant stated the theme succinctly. "It wasn't so much the system that was enriching as much as the people that are interacting with each other. It's [ITV is] a tool that brought us together." She referred to the people brought together from Chicago's mosaic of social worlds (The Chicago Fact Book Consortium, 1990). Hunter (1974) referred to these social worlds as symbolic communities. However, this diversity that served to enrich the students' learning experience, initially presented obstacles to interaction and consequently, to learning. As one student stated when asked about her feelings about interacting with the students at the distant site, "Why should I? I don't even know them."

Much of the students' experiences come from the locations of the City Colleges of Chicago (CCC). The seven CCC are strategically located within defined community areas that are symbolically related. Thus, at each campus, the students' demographic profiles are influenced by communities' demographics. Consequently, an ITV connection between seven CCC campuses can be similar, in many ways, to a connection between seven nations.

More specifically related to the subsequent discussion, the common symbolic identifications that connected the communities presented a barrier to online communications. Initially, students seemed to identify with their campuses and with visual symbols such as race or age. Later, students seemed to interact with symbols such as educational levels and finally, common interests. Eventually, students began to recognize their common human similarities.

The question is: How were these adult students encouraged to share their reservoirs of learning resources? Thus, the focus of this paper is on a discussion of instructional designs/strategies that were used to encourage interaction by reducing the most commonly recognized barriers, sociocultural influences (Stone & Saulino, 1997), to interaction via ITV while simultaneously applying strategies that would reduce the communication barriers produced by symbolic identifications. The latter strategies revealed new reasons for symbolic identifications. In this social context, effective instructional designs/strategies included well-organized class sessions.

Instructions were presented through open classroom discussions that encouraged development of a multicultural perspective. Humor and relaxation were prominent in each class session. Student presentations, site visitations and varied instructional media were most effective among strategies. Most importantly, the teacher's personality and skills as a facilitator contributed significantly to the students' satisfaction with their learning experiences.

For the expert ITV teacher, these instructional designs/strategies are not new. This information is presented to add a dimension to the expert teacher's experience by giving insight to the instructional effectiveness and possible reasons for the success of these instructional designs/strategies in an ITV multicultural setting. For the novice ITV teacher, this discussion based on first-handed experience may provide an insightful introduction to teaching/learning via ITV.

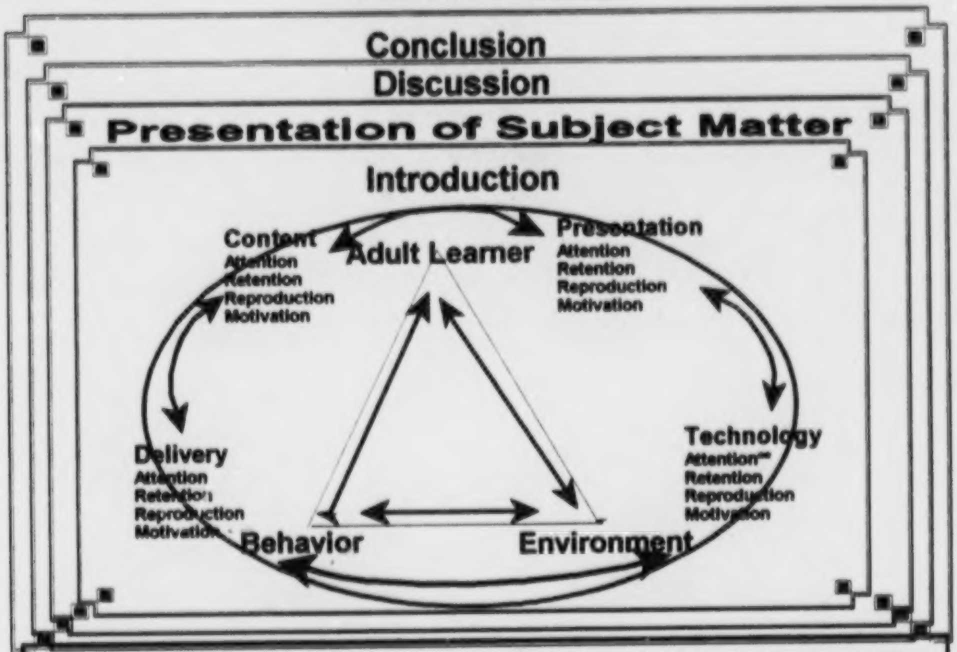
Instructional Design Model for Organized Class Sessions

The model in Figure 1 served as a successful a guideline for organizing a class session (Turner, 1997, 2000). This teacher/instructional designer has integrated the concepts– attention, retention, reproduction and motivation–from the Social Cognitive Theory (Bandura, 1977, 1986), the ideas of the systemic (whole) approaches to instructional designs (Foshee et.al., 1996; Kemp, 1985; Kemp et al., 1994; Richey, 1992), the systematic approach (Price, 1994; Price et al., 1994; Price & Repman, 1994-95), and the divisions of a class session– Introduction, Presentation of Subject Matter, Discussion and Conclusion (Snider & Snider, 1997).

Displaying the segments with rectangular shapes rather than round or oval shapes indicate that each segment must be clearly defined while presenting a class session. As a class session is presented, Gagne et al. (1992) nine events of instruction, Shaeffer and Roe (1985) review of successful teaching behaviors and Monson (1990) principles for teleconferencing are integrated. During each segment of a class session, designs for delivery, content, presentation and technology, concepts from Snider and Snider (1997), are focused on the whole student. Emphases are placed on the adult student's reciprocal interaction with the expected behavior and the environment. The focus is on modes of gaining attention, facilitating retention, enabling motor reproduction and increasing motivation as the student interacts with the delivery, content, presentation and technology. Please note that an asterisk is placed after attention(**) under technology to indicate that attention to the technology should be reduced and attention to the subject matter increased.

To enhance the effectiveness of the organized class sessions, the students were informed about the order of the class session. For example, at the first class session in the third semester the statement was made. "Our class sessions will be divided into four segments—Introduction, Presentation of Subject Matter, Discussion and Conclusion. Additionally, the following techniques were used to present the class sessions. Clear transitions were made between segments. During interaction in a segment, statements were made constantly about the segment to indicate our position in the session. Routinely, the book or other printed material was placed on the Elmo to

Figure 1: *Model for Designing Instructions for Adult Learners in ITV Multicultural Settings



*First presented in Turner (1997, 2000) and based on the ideas and concepts from Bandura (1977, 1986), Foshee et al. (1996), Kemp (1985), Kemp et al. (1994), Price and Repman (1994-1995), Richey (1992) and Snider and Snider (1997). Presentation integrated principles from Gagne et al. (1992), Monson (1990) and Shaeffer and Roe (1985).

indicate exact points in the discussion, references were made to the visuals often and printed handouts were available to explain the information presented in the visuals.

Possible reasons for success. Students at a distance can easily get lost in the discussion. Common possible explanations for this condition, may be attributed to factors such as conditions produced by the technology or the students' physical limitations, academic preparations or learning orientations. However, in this setting, having a student or students lost in a discussion may not have been attributed by others, including the lost student/students, to the latter conditions but may have been attributed to the lost student's/students' symbolic representations, that is racial-group, ethnic-group or age-group. More often than not, the student who was experiencing some difficulty had this perception.

Having a clearly defined class structure reduced possibilities for getting lost in the discussions. Mr. Ahmed, a sixty-three-year-old distant-participant of Indian descent stated, "You always present the lessons well... We never get lost."

Teaching Strategies/Techniques

Student class presentations. Requiring students to make presentations was the most effective method for removing barriers to interaction. Assuming that initial interaction was based on symbolic identification, then to increase interaction, new reasons for symbolic identifications needed to be revealed. During a student's presentation, information was revealed that provided additional reasons for symbolic identification. After a student's presentation, in most instances, class members were given additional reasons to interact with or to include the presenter as a student in subsequent class activities. Reciprocally, often, the presenter found a reason to interact with the class.

Site visitations. When the teacher visited the distant-site, distant students felt included in the class. The teacher learned more about the distant students. Onsite, in face-to-face interaction with the distant students, the teacher was able to encourage the distant-students to share their experiences with the origination-site. Most importantly, students at the origination-site began to feel closeness or nearness to the distant students. They had met the teacher and identified with the teacher. Now, they had a reason to identify with the students at the distant-site. (Teachers' should note one important student-perception. Wherever the teacher was located was perceived by the students as the origination-site for the session.)

Varied instructional media. Nationwide, community colleges accommodate a diverse audience in terms of academic preparation, learning orientations, age groups and with various physical limitations. This variety is even more diverse in an inner city community college. Here, the teacher/instructional designer recognized and accommodated the audience's diversity by including variety in selecting and preparing instructional mediation.

Opened classroom discussions and humorous setting. Brainstorming was the mode for classroom interaction. Students felt that any question was a good question. Surrounded with humor and relaxation, students were given the feeling that spontaneous responses were welcomed. The teacher assumed that if a student was not participating, quite likely psychological participation was in progress (Fulford & Zhang, 1993; Zhang & Fulford, 1994). As indicated by the latter researchers, when the students achieved an adequate confidence level in their participation skills, they were no longer contented with mere observations. They overtly participated.

The teacher's role. As in all classrooms, the teacher played a key role in the success of this class. The teacher was instrumental in helping an outsider become an insider, reducing the "us" and "them" attitudes and promoting the "our class" attitude. Moreover, the teacher's behaviors encouraged student collaboration and cooperation. In turn, students developed a multicultural perspective. Students learned to listen to, respect and tolerate but not necessarily accept their classmates' opinions.

Implications

Students are an invaluable resource in education. While developing techniques that will encourage students to share information, instructional designers must be aware of students' perceptions of interaction. Most importantly, the teacher and instructional designer are reminded that knowing the audience is important for successful instructional delivery.

Additionally, in a multicultural society such as Chicago, ITV can be used to provide more than access to an educational opportunity. ITV can be used to breakdown barriers to communication and increase possibilities for cultural diffusion (Hauser, 1991). Thus, restoring a very important avenue for societal enhancement.

References

Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, New Jersey: Prentice-Hall.

Chicago Fact Book Consortium (1990). *Local community fact book Chicago metropolitan area 1990*. Chicago: The University of Illinois at Chicago.

Foshee, N. H., Colton, M. Z., Barto, T., & Cotell, R. (1996). Using distance education to promote teacher awareness of the Florida holocaust education mandate. *Journal of Educational Media & Library Sciences, 34*(2), 136-149.

Fulford, C. P., & Zhang, S. (1993). Perception of interaction: The critical predictor in distance education. *The American Journal of Distance Education*, 7(3), 8-21.

Gagne, R. M., Briggs, L. J., & Wagner, W. W. (1992). *Principles of instructional design* (4th ed.). Orlando, FL: Harcourt Brace Jovanovich.

Hauser, P. M. (1991). City. In *The World Book encyclopedia* (Vol. 4, pp. 574-594). Chicago: World Book.

Hunter, A. (1974). *Symbolic communities: The persistence and change of Chicago's local communities*. Chicago: The University of Chicago Press.

Kemp, J. E. (1985). *The instructional design process*. New York: Harper & Row.

Kemp, J. E., Morrison, G. R., & Ross, M. R. (1994). *Designing effective instruction*. New York: Macmillan.

Monson, M. (1990). *Bridging the distance: An instructional guide to teleconferencing*. Madison: University of Wisconsin.

Price, R. V. (1994). Price/Repman model for instructional design for college-level courses using interactive television. In A. Yakimovicz (Ed.), *Distance learning research conference proceedings*. (ERIC Document Reproduction Service No. ED 369 898)

Price, R. V., & Repman, J. (1994-95). Instructional design for college-level courses using interactive television. *Journal of Educational Technology Systems, 23*(3), 251-263.

Price, R. V., Repman, J., & White, D. (1994). *Producing effective graduate-level distance education courses for interactive television*. (ERIC Document Reproduction Service No. ED 373 748)

Richey, R. (1992). *Designing instruction for the adult learner: Systemic training theory and practice*. London: Kogan Page Limited.

Shaeffer, J. M., & Roe, R. G. (1985). Effective teaching behaviors as perceived by students in a face-to-face and teleconferencing course. In L. Parker & C. Olgren (Eds.), *Teleconferencing and electronic communications IV* (pp. 216-222). Madison: University of Wisconsin Extension.

Snider, G., & Snider, J. (1997). *Teletechniques I*. Stillwater, OK: Teletraining Institute, Oklahoma State University.

Stone, L., & Saulino, C. (1997). *A sociocultural approach to understanding distance learning*. (ERIC Document Reproduction Service No. ED 414 784)

Turner, A. (1997). *Theory, research and technology for adult education in a changing society*. Unpublished doctoral comprehensive examination, Northern Illinois University, DeKalb.

Turner, A. (2000). *Voices of the people: Experiences with two-way interactive television in the City Colleges of Chicago*. Unpublished doctoral dissertation, Northern Illinois University, DeKalb.

Zhang, S., & Fulford, C. P. (1994). Are interaction time and psychological interactivity the same thing in the distance learning television classroom? *Educational Technology, 34*(6), 58-64.

Biographical Sketch

Audrey M. Turner is a professor at Kennedy-King College, one of the City Colleges of Chicago (CCC), Chicago, Illinois. Her work includes teaching and developing courses for the Center for Distance Learning and the traditional classroom. Her intrinsic interest in providing alternative and creative instructional designs to accommodate a variety of learners with various learning styles, lead her to enter the Doctoral Program in Instructional Technology, Northern Illinois University, DeKalb, Illinois. She recently completed this program. She focused her interest on instructional designs for distant learners with a more specific interest on instructional designs for distant learners in multicultural settings. Among her CCC colleagues, she is known as person who not only promotes two-way interactive television(ITV) as an instructional delivery system but she promotes ITV as a tool to enable culturally diverse learners to share the richness of their diversity. She presented information on the unexpected learning outcomes received in an ITV multicultural setting at the Topics on Distance Learning Conference, Purdue University Calumet, Hammond, Indiana, June 6-7, 2000. As a co-presenter, points on the advantages and disadvantages of using qualitative methodology to evaluate technology were presented at the 2000 AECT (Association for Educational Communications and Technology) Conference, Long Beach, California, February 16-20, 2000.

Address: Kennedy-King College
6800 South Wentworth Avenue
Chicago, IL 60621
E-mail: audturner@aol.com; aturner@ccc.edu
Phone: (773) 602-5163 Work (773) 743-1205 Home
Fax: (773) 602-5089

Reusable Learning Objects (RLOs) and Personalized Learning: Implications for Design and Development

Ellen D. Wagner
Viviance AG new education

Web-based teaching and learning methodologies currently in vogue offer a glimpse at the array of variables that designers, instructors and learners must be able to accommodate in the future. This paper suggests that emerging e-learning models will increasingly be based on a reusable learning object architecture paradigm. In addition to optimizing the value and effectiveness of e-learning solutions by using digital content resources to create personalized learning resources and programs, the reusable learning object architecture paradigm offers organizations strategies and tactics for leveraging its intellectual capital to better position itself within the new Internet economy.

Introduction

There is no question that the impact of the World Wide Web on business practices, particularly in the United States, has been profound. James Ledbetter (Ledbetter, 1999) has noted that "dot-com" companies are now firmly entrenched in popular culture; US leaders from Wall Street to the White House have endorsed the Internet as America's financial engine. In a recent article published in *The Industry Standard*, Ledbetter described two major studies that attempted to quantify the Internet Economy. One study, published by the University of Texas with funding from Cisco Systems, described it as an industry that generated $300 billion annually, while a follow-up study from the same investigators described a 68% annual growth rate, claiming that the Internet Economy now employs more than 2.3 million people. A second report published by the U.S. Department of Commerce found that the so-called digital economy accounted for approximately 8% of the U.S. gross domestic product, outpacing such industries as housing construction and motor vehicle manufacturing.

U.S. education and training industries have been as susceptible to the seduction of the Internet Economy as any other economic sector currently in operation. Of particular relevance for education and training entities interested in leveraging the Internet's economic opportunities are activities associated with the creation of new content, repurposing of existing content, the aggregation of content resources from a wide variety of content holders such as publishers, universities and subject matter experts and the provision of content in a variety of reusable, digital forms. The ability to generate revenues by displaying, selling, leasing or licensing such content by means of e-commerce functionality has done more to accelerate general interest in e-learning than any other development in the past decade.

E-Learning's Role in the Internet Economy

Electronic learning (Wagner, 1998)—increasingly called "e-learning" (Trondsen, 1999)—refers to the wide range of technology applications, strategies and tools that offer learners the means to increase their knowledge and improve their skills. Earlier trends in the e-learning space included computer-based training (CBT) and computer-managed instruction (CMI), distance learning (especially programs using broadband video distribution via broadcast, coaxial cable or satellite), computer-mediated conferencing and distributed (online) learning. While constituting the biggest share of the e-learning space in the early 1990s, CD-ROM multimedia programs have been outpaced by interactive online learning programs available via the World Wide Web. Today, the combination of web-based interaction functionality (particularly as they related to collaborative environments) and e-commerce transactional capabilities are the foundation for today's e-learning designs and materials development.

Trends in several distinct arenas have influenced and shaped e-learning's growth. The first trend deals with technology infrastructure. The ubiquitous availability, scalability and interoperability of information technologies have made e-learning a viable alternative for even small, geographically remote organizations. Secondly, increasingly complex, competitive workplace needs for information, learning and performance support have resulted in increased demands for better management of an organization's intellectual assets: its knowledge, its history, its shared experiences, its discoveries, its record of successes and failures, its innovations - when and where these resources are needed most. Knowledge management focuses on the accessibility and reusability of an organization's intellectual assets. Thirdly, very important work addressing learning architecture and learning object standards is taking place to ensure the interoperability of learning objects – the proverbial "coin of the realm" when striving for ways to leverage an organization's intellectual capital. These standards ensure that can be stored, compiled and assembled for a wide range of applications using a variety of learning management systems and settings.

Why Reusable Learning Objects?

In many respects, an e-learning solution is a very specialized subset of an e-commerce solution; instead of selling a book or running an auction, individuals have the option of purchasing learning content – either as a course or components of a course, as a performance support tool, as information resources or some combination thereof. Each of these categories of learning interventions consists of content that has been compiled and assembled to form lessons, assessments, practice opportunities, case studies and so on. Each of these categories is the result of a compilation of discrete digitized content components called reusable learning objects. These "content objects"[1] can be configured in a variety of ways. Some may consist of granular digital elements such as illustrations, diagrams, or applets. Increasingly, however, objects intended for use in online learning environments are more likely to feature content of sufficient quantity that a learner can attain mastery of a specific performance objective. Other objects may consist of metafiles encapsulating instructional methods for ensuring that content resources are displayed appropriately for specific varieties of learning tasks. Still others may represent meta-cognitive strategies to assist individual in making effective use of the information objects. Other objects may simply provide a context for enhancing the meaning of assembled content and meta-cognitive strategies.

---

[1] A learning object is the smallest element of stand-alone information (including but not limited to online instruction or a performance support tool) required for an individual to achieve an enabling performance objective or outcome. This description is meant to be illustrative rather than definitive; it is an amalgam of descriptions and definitions currently being used in professional discussions, presentations and cations dealing with learning and technology.

The value of reusable learning objects is that they extend the utility of the content, methods, self-management methods and conceptualization techniques that are typically represented in conventional instruction and training programs. While instruction and training continue to hold value for organizations for improving employee knowledge and skills, instruction and training - whether it is instructor-led in a classroom, instructor-led online, or self-paced workbooks or self-paced online - is insufficient for providing a full range of continuous, individualized performance improvement interventions that are increasingly needed for people to retain their competitive edge in today's competitive marketplaces—whether one is in high tech, financial services, healthcare, transportation or education. Instruction and training have traditionally been something which is "done to" learners, implemented to react to a perceived performance deficiency(Ellis, Wagner, & Longmire, 1999). Specific performance completion outcomes (e.g. graduation or certification of time-on-task) need to be achieved; consequently, learners are expected to conform to a path dictated by either the designer of the learning experience, the instructor for the learning experience or both. Typically, it has not been a goal of training to meet the individual needs of the learner. In this paradigm, it is been easy to focus on the process of training rather than on the results of learning. Training designs typically do not address the need for flexibility required to meet an individual's learning needs, nor do training delivery mechanisms make learning resources accessible at times when any given individual may need it.

E-learning solutions built upon a reusable learning object paradigm typically combine the functionality of "just-in-time" access to digital, web-delivered content with profiling functionality to assist in content filtering/selection, compilation and assembly. Further, it actively leverages online collaboration opportunities, and offers "e-commerce" transactional functionality to facilitate subscription, purchase or "pay-per-view/hit" options. (Ironically, the addition of e-commerce transactional functionality to distance and distributed learning design paradigms (Wagner, 1999) has resulted in focusing significant business-to business and business-to-consumer attention on e-learning.) This combination of features provides learners the means to proactively pursue information and performance support resources unconstrained by conventional training design or delivery mechanisms. E-learning tools build using a reusable learning object architecture can offer individualized, personalized learning by means of profiling such variables as interests, learning styles, presentation preferences and performance requirements. They can diagnose skill gaps and prescribe professional development activities ensuring the link between learning events and on-the-job practice. Individuals can monitor their own progress and determine what the next step in their professional development should be. Learning resources, ranging from individual objects to online communities of professional practice to professional advisors and mentors become available when and where those resources are needed by the learner.

Challenges for Designers

Even though there are strong arguments from both pedagogic and return-on-investment perspectives for embracing learning solutions employing a reusable learning object approach for designing personalized learning interventions, the reusable learning object approach does offer designers a number of challenges:

- The vast majority of content currently available from universities, publishers and commercial course providers are based on the "knowledge model" as constructed by subject matter experts. In a "knowledge model," content is organized around topic or subject attributes rather than around discrete performances expected of excellent performers where the targeted use of learning objects may offer advantages. Content providers accustomed to producing fully integrated courses may very well question the value of changing the way that they organize learning content. While Jennings (1999) and others have already predicted the "death of the online course," content providers have not yet broadly embraced the creation of digital content objects as courseware building blocks. Until such objects are more readily available, the ability to construct fully personalized competency-based learning plans may be compromised by the relative lack of availability of competency-specific content object resources.
- Currently there is a strong emerging trend that calls for using learning objects as the building blocks for constructing learning interventions that meet specific interests, needs and styles of individuals. Nevertheless, the most typical way in which individuals complete online learning experiences is by means of online courses. There appear to be two reasons to explain this phenomenon. The first is that the idea of constructing a personalized learning program by selecting and assembling the array of learning objects that best correlate with learning interests, performance gaps, learning style and presentation preferences is still relatively new. Courses represent the most familiar way to offer learning content to students, whether the course be a classroom-based, instructor-lead course or a web-based, instructor-lead course from a virtual institution. This familiarity goes a long way in establishing the trust between the learner and the e-learning solutions provider that is necessary for building brand loyalty. Nevertheless, "comfort with the familiar in an unfamiliar, virtual space" will increasingly find itself balanced against "improved productivity and competitiveness enabled by leveraging organizational knowledge and personalizing e-learning programs." Secondly, there is the issue of learning object interoperability. Most commercially available online providers purport that their software meets, AICC, IMS or IEEE interoperability standards. However, these courses come bundled with proprietary CGI, user tracking and course player code that compromises interoperability. Even though individual units or lessons of an online course can be indexed using metadata tags, launching and displaying only a part of a course, users cannot typically enter and exit an extant course without compromising navigation and user tracking functions. Until such a time when reusable learning objects are readily available within organizations, from commercial content publishers or from content aggregators, online learning designs will continue to emphasize presenting content in the ready-to-use, familiar form of the course.
- *Standards for Learning Architecture Learning Objects.* Unlike LAN or CD-ROM development environments where closed proprietary protocols tended to guide the design, development and deployment of digital learning resources, developers producing web-enabled content must ensure that open, non-proprietary standards form

> the foundation of the learning resources development process. The establishment of standards for learning architecture and learning objects is, therefore, based upon the goal of defining interoperability protocols so that all learning objects can be used on all varieties of learning management and content retrieval systems. Learning Architecture Learning Objects (Hodgins, 1999) standards are either learning-focused or technology-focused. Learning-focused standards address issues related to content, metadata and the establishment of a learning management system data model. Standards typically address issues associated with the interoperability of HTML, HTTP, XML, Java and JavaScript. They will also need to be developed to address issues related to contextualization, learning-specific utility and achievement of designated learning outcomes.

Longmire (Longmire, 2000) has asserted that most electronic learning content is currently developed for a specific purpose such as a course or a situational performance intervention rather than being developed for use in an objectbase (a collection of learning objects, typically contained or referenced in a relational database). However, he suggests that as object-oriented "knowledge content" a valuable commodity, content will be developed and configured for deployment as learning objects in multiple settings. The reason for this shift comes from the recognition that digitized content that can be repurposed for use in a variety of setting will pay off many times over in terms of costs, development time, and learning effectiveness. The object approach can satisfy both immediate learning needs—such as a knowledge-based or skills-based course—and current and future learning needs that are not course-based

References

Ellis, A. L, Wagner, E. D., & Longmire, W. (1999). *Managing Web-based training*. Alexandria, VA: American Society for Training and Development.

Hodgins, W. (1999). *Learning standards*. Available: http://www.learnativity.com/standards.html

Jennings, C. (1999, November). *Where does online learning end and knowledge management begin?* Paper presented at the meeting of Online Educa Berlin: The 5th International Conference on Technology Supported Learning, Berlin, Germany.

Ledbetter, J. (1999). The Internet economy gets real. *The Industry Standard, 2*(39), 96-106.

Longmire, W. R. (2000). Content and context: Designing and developing learning objects. In D. Brightman (Ed.), *Learning without limits (Vol. 3): Emerging strategies for e-learning solutions*. San Francisco: Informania.

Trondsen, E. (1999, September). *Learning on demand*. Paper presented at the meeting of the Stanford Research Institute, Palo Alto, CA.

Wagner, E. D. (1998). Are you ready for electronic learning? *In Learning Without Limits*, (2nd ed.). San Francisco: Informania.

Wagner, E. D. (1999). Beyond distance learning: Distributed learning systems. In H. Stolovich & E. Keeps (Eds), *Handbook of Human Performance Technology* (2nd ed). San Francisco: Jossey-Bass.

Achieving Higher Levels of Learning in Web-Based Critical Business Skills Training

Sally H. Welsh, M.Ed.
Director, Instructional Design
SkillSoft Corporation

Introduction

The interest in technology-based solutions for critical business skills training and development has increased significantly during the last few years. Accompanying this interest is a major concern, particularly in regards to "softer" content areas involving interpersonal and communication skills:

Can technology-based training (TBT) or Web-based training (WBT) effectively take learners beyond the basic levels of knowledge and comprehension?

This paper explains the levels of learning concept, presents several well-known systems for classifying learning outcomes by level, and discusses the instructional strategies and methods associated with achieving higher levels of learning. Examples of how those methods might be used within a business and professional development curricula will augment that discussion. The paper closes with a discussion of how the growing interest in higher levels of learning impacts both the instructional designer and the learner.

Levels of Learning

Learning is a process that produces permanent changes in behavior or behavioral potential. These behavioral changes are the result of a person's experiences or practice, as opposed to natural causes, such as maturation or illness (Shaffer, 1989). The concept of learning levels is based on classifying those behavioral changes and learning outcomes in rank order based on amount, degree, or difficulty level. Classifying levels of learning according to what a learner can do at the end of instruction is a convenient and common way of differentiating between the levels and their associated skills and behaviors.

There are several well-known classification systems, or taxonomies, of learning levels. Even though each taxonomy is characterized by one or more attributes that distinguish it from the others, one attribute shared by all. Each classification system describes a continuum or hierarchy that moves from low to high and in which each outcome is prerequisite to those above it. This "low to high" characteristic holds true irrespective of the other variable attributes used to describe the concepts behind the continuum.

Basic Three-level Taxonomy

A simple, yet well known and widely used learning taxonomy is based on a three-level organization (Gronlund, 1970). Although the model is simple, it implies a change from simple to complex tasks as well as a transition from content-centered to problem centered activities.

Level of Learning		Description of Learning
3	**Application**	Put facts, concepts, principles, or skills to appropriate use
2	**Comprehension / Recall**	Reconstruct or restate in own words; translate from one form to another; recognize previously unseen examples
1	**Awareness / Recognition**	Remember or recognize content in exactly the same form in which it was presented

Component Display Theory (M. D. Merrill)

Another three-level taxonomy of learning can be found within M. David Merrill's Component Display Theory (CDT). CDT is a complex approach to designing instruction that is based on specific presentation forms for learning classified across two dimensions—levels of learning and content type (Kearsley, 2000). A detailed discussion of the presentation forms and how they are applied across the two dimensions is beyond the scope of this paper. However, CDT's treatment of learning levels, especially in comparison to Gronlund's three-level organization, is a good demonstration of how the taxonomies can be different, yet similar.

Level of Learning		Description of Learning
3	**Find**	Reorganize content to create new knowledge
2	**Use**	Use knowledge to process information
1	**Remember**	Remember or recognize via associate memory

The first two levels in the CDT system cover all three levels in the Gronlund system. Merrill makes a clear distinction between using existing knowledge to process information, and creating new knowledge from existing knowledge. But it could be argued that Gronlund's third level, Application, is all encompassing and is meant to include "using existing knowledge" as well as "reorganizing existing knowledge structures into new knowledge." Two other systems of classifying levels of learning expand on these differences by adding more levels and defining more distinctly the types of learning that occur at each level.

Classification of Learner Cognitive Abilities (Davis) and Bloom's Taxonomy (B. Bloom)

Bloom and his colleagues developed a hierarchy of learning outcomes familiar to many corporate and academic learning environments. The six levels in Bloom's Cognitive Taxonomy Taxonomy are similar to the six levels in Davis's Classification of Learner Cognitive Abilities.

A side-by-side comparison of the two classification systems points to the differences as well as the similarities. In the lower levels of both systems, learning is simple, general, passive, structured and content-centered. Higher levels of learning on either continuum means moving from simple to complex, from general to situational or contextual, from structured to ill-structured, and from content-centered to problem-centered. The adjectives—complex, ill-structured, and problem-centered—accurately describe what most of us encounter daily in our professional and personal lives. These descriptors also imply that as a result of learning, something is happening. Higher level learning activities (doing, applying, using, experiencing) inherently increase activity, productivity and even creativity.

Bloom's Taxonomy		**Level**	**Classification of Learner Abilities**	
Evaluation	Judge appropriateness for a specific purpose	6	**Synthesis**	Produce new, unique, or creative solution to problem
Synthesis	Put together parts to form a new whole	5	**Analysis**	Recognize a problem and solve it
Analysis	Break an item into its constituent elements or parts	4	**Application**	Apply principles to solve a given problem
Application	Apply abstract info in a concrete situation	3	**Interpretation**	Recognize correct and incorrect application; predict correct application
Comprehension	Translate, apply rules, recognize unknown examples; use without relation to other material	2	**Translation**	Distinguish between examples and non-examples
Knowledge	Recall isolated and specific information bits	1	**Memory**	Define or state a concept or principle

Instructional Activities for Achieving Higher Levels of Learning

Research indicates higher level learning is essential for transfer of knowledge to real-life, work-based situations. Per Schank (1995), "There is really only one way to learn how to do something, and that is to do it. Learning a skill means eventually trying your hand at the skill." In other words, the goal is "performance."

But the way in which "doing it" is imbedded within instruction can and should vary quite a bit. For instance:

- Role-plays and simulations are effective methods for allowing learners to"try their hand" at professional development skills such as communication, negotiation, sales, and conflict management.
- Presentation of a case study or case-based scenario following by analytical, predictive, or evaluative tasks is useful for higher performance levels in marketing, sales, or finance.
- Active learning, such as building a strategic plan in conjunction with strategic planning instruction, provides an immediate opportunity for transfer of learning to real-life, work-based situations.
- Practice of procedural, predictive, or analytical tasks is possible in almost any context or content area. For instance, procedural tasks are common in software and

manufacturing environments. Predictive tasks are pertinent for training in sales, project management and leadership. Analytical tasks are common in finance or marketing content, as well as Human Resource curricula.

Problem solving is a high level cognitive ability which has drawn a lot of attention in both adolescent and adult education. Problems are gaps between what people can do and what they want to do. The goal of problem solving is to devise a plan or solution that eliminates or diminishes the impact of the problem. Because the plan or solution is usually new to the person tackling the problem, it's almost impossible for that person to avoid learning at a higher level. In fact, it's almost impossible to avoid linking problem solving with any discussion of higher levels of learning. They go hand in hand!

Behavioral indicators of higher level cognitive abilities are not always easy to define. For instance, what is the behavioral indicator of "analysis"? A learner might have some scratch marks on a piece of paper, or a checklist to fill out. But what if there is no outward tangible evidence? After all, analysis occurs inside a person's head, invisible to virtually everyone. The results of that analysis, however, are easy to see–such as a report, a solution, a prediction, or a decision about how to proceed. So when searching for the right word to convey the higher level of learning inherent in the cognitive behavior, start with the definitions that accompany the learning levels in this paper (such as use, apply, predict, create, reorganize). If that doesn't work, then think about how the performance or the behavior will evidence itself in the real world.

Implications for Instructional Designers and Learners

As more learning finds its way to technology-based delivering environments, its imperative to keep the quest for higher levels of learning in clear view. Design of higher level learning for technology augments rather than diminishes the need for adherence to good instructional design practices. The amount of guidance, prompting, and feedback in simulations, role plays, and case studies can be varied, but the more the better. And, as learners become more sophisticated across all e-learning solutions, their level of efficacy should improve exponentially. For, as Knowles reported in 1990, "…highly skillful self-directed learners make more effective use of behaviorist programs and didadtic teachers than dependent learners do: the more proficient we become as self-directed learners, the better we can make use of all kinds of learning experiences."

Keep the learner in mind when you are designing roleplays, but especially with simulations. Longer simulations presented without context or focus have been shown to be less effective than shorter simulations with clear teaching points. Situations devised for practice must be realistic, feasible, and contextually meaningful for the learner.

The web-based portion of this higher level learning stratgy is actually the least problematic aspect of the entire design process. Once an instructional designer has a clear understanding of what it takes to deliver higher level learning and has selected the appropriate instructional strategies, methods and scenarios, it's simply a matter of molding those methods to whatever Web delivery restrictions are in place when the learning is developed. As the Web continues to grow and expand in functionality, the number of limitations and restrictions will decrease and eventually the WEB will be able to deliver anything that is currently deliverable on a CD ROM.plus more,

Conclusion

Achieving higher levels of learning in web-based learning, or in any instruction for that matter, is of paramount importance. The more time learners in higher level activities, the better their chances for transferring the knowledge to real-life, work-based situations.

References

Clark, R. (1998). *Building expertise: Cognitive methods for training and performance improvement*. Washington, DC: ISPI.

Davis, R., Alexander, L., & Yelon, S. (1974). *Learning system design*. New York: McGraw Hill.

Driscoll, M. (1998). *Web-based training: Using technology to tesign adult learning experiences.* San Francisco: Jossey-Bass

Fleming, M., & Levie, W. H. (Eds.). (1993). *Instructional message design: Principles from the behavioral and cognitive sciences.* Englewood Cliffs, NJ: Educational Technology Publications.

Gagne, R., Briggs, L., & Wager, W. (1988). *Principles of instructional design.* Orlando: Holt, Rinehart, and Winston.

Gronlund, N. E. (1970). *Stating behavioral objectives for classroom instruction*. MacMillan.

Hall, B. (1997). *Web-based training cookbook*. New York: Wiley & Sons.

Kearsley, G. (1994-2000*). Explorations in learning & instruction: The theory into practice database* [On-line]. Available: http://www.gwu.edu/~tip/index.html.

Khan, B. H. (Ed.). (1997). *Web-based instruction*. Englewood Cliffs, NJ: Educational Technology Publications.

Knowles, M. (1990). *The adult learner: A neglected species* (4th ed.). Houston: Gulf Publishing.

Kruse, K., & Keil, Jason. (2000). *Technology-based training: The art and science of design, development, and delivery.* San Francisco: Jossey-Bass Pfeiffer.

Mager, R. (1962). *Preparing instructional objectives.* Atlanta, GA: Center for Effective Performance.

Schank, R. (1997). *Virtual learning: A revolutionary approach to building a highly skilled workforce.* New York: McGraw Hill.

Schank, R., & Cleary, C. (1995). *Engines for education.* Hillsdale, NJ: Lawrence Erlbaum Associates.

Shaffer, D. R. (1989). *Developmental psychology: Childhood and adolescence* (2nd ed.). Pacific Grove, CA: Brooks/Cole.

Biographical Sketch

Sally Welsh is Director of Instructional Design for SkillSoft Corporation and is responsible for the design and implementation of the instructional models used in SkillSoft's web-based business and professional training products. A SkillSoft founder, Sally draws on over ten years experience and a wide range of instructional design and development experiences, including print, video, instructor-led training, interactive video, CBT, and TBT. She is the recipient of several academic and professional awards and is currently a doctoral candidate in the Instructional Technology program at the University of Houston.

Address: SkillSoft Corporation
20 Industrial Park Drive
Nashua, NH 03062
E-mail: welsh@skillsoft.com
URL: www.skillsofto.com
Phone: (603) 324-3000 Ext. 235
Fax: (603) 324-3009

Lack of Accessibility on the Web and the Need for ADA Compliance: Results From One University

Joe Wheaton
Associate Professor in Rehabilitation Services and Co-Director
Web Accessibility Center

Richard Howell
Assistant Dean for Technology
College of Education

John Chovan
Director of Technology
College of Education

Sean O'Briant
Adaptive Technology Specialist and Co-Director
Web Accessibility Center, Office of Disability Services

The Ohio State University

Abstract

The accessibility of Web pages for the courses registered with the distance education coordinating organization was analyzed using the *Bobby* (Center for Applied Special Technology; CAST, 1999) validation tool. Of the 80 unique pages examined, 29 (36%) were "Bobby approved". The most common error was the failure to add keyboard shortcuts for frequently used links.

Background

The World Wide Web (WWW) is becoming a common method of delivering distance education. Many faculty members are modifying existing courses or creating new ones to be offered over the Internet. Moreover, Title II of the Americans with Disabilities Act (U.S. Department of Justice, 2000) mandates that "State and local governments give people with disabilities an equal opportunity to benefit from all of their programs, services, and activities (e.g. public education….)" Nevertheless, it appears that little attention is being given to making these courses accessible to students with disabilities.

To allow students to identify courses that offer Web enhancements, Web pages created by faculty at The Ohio State University call be listed with the "Web Course Registry". Students wishing to take a course over the Internet or has Web-based enhancements, can use the Registry to find such courses and link to the "welcome" pages. These "welcome" pages are typically the syllabus, although they can be anything the faculty member chooses, including links to the department.

Method

Sample

As of June 12, 2000, two hundred fifty-six courses were listed in the Registry. Many of these courses, however, were duplicates (e.g., repeated sections using the same homepage) or had restricted access and were not accessible to persons not registered for the course. After the duplicates and restricted courses were culled, 80 courses were identified for analysis.

Instrumentation

The *Bobby* (CAST, 1999) validation software was downloaded for CAST. *Bobby* allows a Web address to be inserted in the program and an analysis of the page's accessibility to be computed. The analysis is based on the guidelines developed by the Trace Research and Development Center (http://trace.wisc.edu) and subsequently codified by the World Wide Web Consortium's (W3C) Web Accessibility Initiative (WAI; http://www.w3.org/WAI/) into the Web Content Accessibility Guidelines (http://www.w3.org/TR/WAI-WEBCONTENT/). Using these guidelines, *Bobby* identifies three priority levels of accessibility (Priority 1, Priority 2, and Priority 3). Typically, but not always, failure to meet the Priority 1 items will result in failure to obtain a "Bobby Approved" rating. Priority 2 and Priority 3 items are not required but should be incorporated for full accessibility. *Bobby* generates a report for each site entered indicating approval, the number of Priority 1, 2, and 3 errors found, and a listing of all the errors with links to suggestions for repair. A summary report of all the pages analyzed is also generated.

Data Analysis

All courses listed were examined for duplicates (e.g., multiple sections) and the Web address for all remaining sites were entered into *Bobby*. Only the introductory page (the home page) was examined; linked pages were not evaluated. The number of approvals were tabulated and the most common errors identified. Frequency counts and percentages were calculated.

Results

Of the 80 unique, unrestricted courses analyzed, 29 (36.25%) were "*Bobby* Approved," indicating that they meet all Priority 1 guidelines (they also meet all the Priority 2 and Priority 3 guidelines). A closer examination of these pages indicated that they were rather simple; that is, their most common design element was tables, used by 15 of the 29 pages; images, used by 5 pages; and background images, used by 2 pages. Fourteen pages were strictly text, without even the most common formatting attributes.

Across all 80 pages there were 6,812 instances of errors of some type. The most common Priority 1 problems encountered were: (a) the contrast between text, images, and background (519 instances, 7%); (b) images possibly conveying important information needing descriptive links (377 instances, 5%); (c) having flashing or blinking images (301 instances, 4%); (d) failure to identify row and column header cells in tables (295 instances, 4%); and (e) failure to provide alternative text for images (291 instances, 4%). As part of the output, *Bobby* identifies how difficult it is to fix these errors. Providing alternative text for images and identifying header cells were classified as easy, and the effort and skill need to fix the other three errors was identified as moderate. Thus, none of the problems identified above were difficult to remedy.

Discussion and Recommendations

Eighty Web pages were examined for accessibility to persons with disabilities. Approximately 36% were judged to be "Bobby Approved"; however, these pages were typically very simple and lacked many of the design elements commonly associated with quality Web pages. In addition, the errors that were committed most frequently were relatively simple and would have been easy to fix.

We began this study with the assumption that we would find very few Web pages able to pass even minimal accessibility criteria and were happy to find over 36% of the pages were able to pass *Bobby's* evaluation. Nevertheless, this means that almost two-thirds of the pages were not accessible. Moreover, the sites in this two-thirds were often the sites that were more extensive and usually showed more effort in their design. Finally, the five most common Priority 1 errors found were all moderate to easy to fix. This suggests that even Web page authors with moderate to high skills are not aware of or are not using even simple good accessibility design practices.

The results of this study indicate that students with disabilities are being denied full access to the educational services offered to other citizen, notwithstanding the legal mandates arising for federal laws such as the Americans with Disabilities Act of 1990. Consequently, colleges and universities should be providing education to increase awareness of the legal requirements and training to ensure that all courses, including distance education courses, accessible to all students.

References

Americans with Disabilities Act of 1990, 42 U.S.C. §§ 12101 *et seq.* Accessed via the Internet on June 13, 2000 at: http://www.usdoj.gov/crt/ada/cguide.htm#anchor62335

Center for Applied Special Technology (1999). *Bobby* (version 3.1.1). Accessed via the Internet on June 12, 2000 at: http://www.cast.org/bobby

U.S. Department of Justice. (2000, May 11). *A guide to disability rights laws.* Accessed via the Internet on June 13, 2000: http://www.usdoj.gov/crt/ada/cguide.htm#anchor62335

Biographical Sketches

Joe Wheaton is an associate professor in Rehabilitation Services in the College of Education at The Ohio State University. Dr. Wheaton teaches courses in medical information, adjustment to disability, job placement, and adaptive and assistive technology. He is also the technology coordinator for the School of Physical Activity and Educational Services in the College of Education and co-director of the Web Accessibility Center (WAC), a center developed to assist faculty making their Web pages accessible.

Address: 356 Arps Hall1
945 N. High St.
Columbus, OH 43210-1120
E-mail: wheaton.3@osu.edu
URL: http://www.coe.ohio-state.edu/jwheaton
Phone: (614) 292-8313
Fax: (614) 267-2485

Richard Howell is an associate professor in Special Education in the College of Education at The Ohio State University. Dr. Howell teaches courses new and emerging technologies for persons with disabilities. He is also associate Dean for Technology of the College.

Address: 149 Arps Hall
1945 N. High St.
Columbus, OH 43210-1120
E-mail: howell.4@osu.edu
URL: http://www.coe.ohio-state.edu/rhowell
Phone: (614) 688-8541
Fax: (614) 292-4255

John Chovan is Director of Technology Services for the College of Education at The Ohio State University. He teaches courses in using technology in the classroom and applying it in the curriculum.

Address: 020 Ramseyer Hall
1965 N. High St.
Columbus, OH 43210-1120
E-mail: chovan.1@osu.edu
URL: http://www.coe.ohio-state.edu
Phone: (614) 688-3325

Sean O'Briant is the Director of Assistive Technology for the Office of Disability Services at The Ohio State University, and co-director (with Dr. Wheaton) of the WAC.

Address: 150 Pomerene Hall
1760 Neil Ave.
Columbus, OH 43210-1120
E-mail: obriant.1@osu.edu
URL: http://www.ods.ohio-state.edu/wac/index.html
Phone: (614) 292-3307

Cultural Factors Influencing On-line Interaction and Group Dynamics

Penne L. Wilson, Adjunct Professor
College of Santa Fe at Albuquerque
Research Assistant, Doctoral Student
Organizational Learning Instructional Technology
University of New Mexico

Charlotte N. (Lani) Gunawardena, Associate Professor
Organizational Learning Instructional Technology
University of New Mexico

Ana C. Nolla, Research Assistant
College of Education
Doctoral Candidate
Organizational Learning Instructional Technology
University of New Mexico

Cultural Factors Associated With the Unique Characteristics of Computer Mediated Conferencing

Computer Mediated Instruction, (CMC) an instructional approach, being used around the world at all educational levels, endorses both task-oriented and socially oriented exchanges without the limitation of time and geographical location (Garton, Haythornthwaite & Wellman, 1997). In this paper, the description of the characteristics of CMC is taken from the work of Harasim. The definitions of the cultural factors which can influence CMC are identified from the theories of Hofstede and Hall. Each section will include examples from personal experience, informal interviews, and research relevant to cultural factors influencing on-line interaction and group dynamics in the models of CMC in the educational environment. Rogers (1986) indicates that CMC involves using the "hardware, equipment, organizational structures, and social values by which individuals collect, process, and exchange information with other individuals" (p. 2). The interactions provided by CMC commonly occur asynchronously or synchronously

Characteristics of Computer Mediated Communication

Four of the five characteristics of CMC identified by Harasim (1990) are relevant to the discussion here: Many-to-Many Communication, Time-Independent Communication, Text-Based Communication, and Computer Mediated Learning.

Many-to-many communication. The CMC environment allows many-to-many communication and structures the information exchange and group interactions. Rice (1990) in Harasim further explains that CMC facilitates active learning collaborations through the exchange of information into groups, out of groups and within groups. This many-to-many characteristic is illustrated by a CMC which occurred between students at the University of New Mexico (UNM) and the University of Guadalajara (UDG) who were taking the same course. For UDG students reported that the communication with students at UNM exposed them to different ways of thinking and helped them to become more familiar with the characteristics of a country that is so close to them and at the same time so far away.

Time-independent communication. In CMC there are two times, synchronous and asynchronous. In synchronous, real time, communication, the interaction of participants takes place in a setting similar to face-to-face communication since all of the people are on-line at the same time. A drawback is that synchronous communication negates time independence. Asynchronous, non-real time, group learning increases opportunities for member input that may enhance the quality of decision making. Because the system can accept and display input from all participants, there is no concern that time restrictions or turn talking will limit expression or opportunities to speak. In the University of New Mexico/University of Guadalajara asynchronous conference, both groups were expected to be equal participants. UDG students let it be known when they were frustrated by a lack of response from UNM students. This also demonstrates Harasim's (1990) warning that "consensus decision making can be awkward and time-consuming on-line. Long delays result if group members do not log on regularly to present their position or to agree to a proposal…Group dynamics can suffer because in many ways this medium does not offer tools to support such process as forming groups and identifying and coordinating groups tasks" (p. 47). Asynchronous collaboration has other disadvantages. Communication anxiety, the feeling experienced when one's message is not answered or referenced, is one of them (Feenberg, 1987). UDG and UNM students reported different expectations for communication. The UDG students needed prompt feedback to messages and guidance for interpretation of meaning. According to Harasim, (1990) "being properly located in the asynchronous 'timeline' is apparently quite important" (p. 48).

Text-based communication. In CMC interactions are textbased, selftranscribed and retrievable. For Harasim (1990) text-based interactions contribute to more reflective interaction. In addition, the "need to verbalize all aspects of interaction within the text-based environment can enhance such metacognitive skills as self-reflection and revision in learning" (Harasim, 1990, p. 49). Since only text is usually exchanged, many of the nonverbal and contextual cues generally rich in relational information are absent in computer-mediated communication. Hiltz (1978) describes the loss of information in computer-mediated communication as "the narrowing of the bandwidth" (p. 149). Because of the loss of all but the visual channel of information, there is a heightened importance of the written messages. When the University of Guadalajara students were not receiving timely responses from the UNM students, the UDG students were assertive in their statements about lack of response and capitalized their complaints. The use of capital letters was one way to indicate their emotions. To compensate for the narrow bandwidth of information, "clear and explicit articulation is essential for effective group interaction" (Harasim, 1990, p. 49).

Computer mediated learning. Computer-mediated communication is interactive, and encourages involvement. Since computers have the ability to present, receive, process, and manage information, "online education interaction, being revisable, achievable, and retrievable, augments the user's control of the substance and process of the interactions" (Harasim, 1990, p. 51). Interaction is based on exchange of information, requiring participants to formulate arguments or reorganize material to introduce new relationships or concepts. On-line environments are particularly appropriate for collaborative learning approaches because they emphasize group interaction. University of Guadalajara students reported that regardless of language and technical barriers, they gained a comfort level with using the computer. In addition the CMC system made it possible to communicate with UNM students and to learn by doing a collaborative group project.

Cultural Factors Related to On-Line Interaction and Group Dynamics

Culture can be defined as the epistemology, philosophy, observed traditions, and patterns of action by individuals and human groups (R. M. Branch, 1997, p. 1). In his landmark research into business-oriented cross-cultural values, Hofstede (1984) used factor analysis to identify four dimensions against which the nationally held values of his sample can be classified. The relevance of Hofstede's research to educational settings is based on the assumptions that role patterns and value systems in a society are carried forward from the school to the job and back. He labeled these dimensions "power distance," "uncertainty avoidance," "individualism-collectivism," and "masculinity-femininity." These four dimensions are the first element to be considered in the development of CMC.

Individualism-collectivism. (IC) Individualistic cultures emphasize the individual's goals while collectivist cultures stress that group goals have precedence over individual goals. IC's is the major dimension of cultural variability used to explain cross-cultural differences in behavior. Members of individualistic cultures, for example, promote self-realization; collectivist cultures, in contrast, require that individuals fit into the group. Group activities are dominant, responsibility is shared and accountability is collective. Harmony and cooperation among the group tend to be emphasized more than individual function and responsibility. It is this characteristic that is evident in the difficulty the Mexican and New Mexican students had in developing a relationship and maintaining computer mediated communication. The Mexican culture is identified as a collectivistic culture, while the United States is identified as an individualistic culture. When the Rector of UDG changed during the timeframe of the course, one of the students reported, "As you know the Rector has changed so almost everybody (holding positions in the university) has changed. It was like a testing period in which moving was death. This is one of the reasons our course has had so many troubles. Even the students' teachers were anxious waiting for these changes." As a result of the change, students were more concerned about the effects of the events occurring at UDG on the group and logged on much less often than previously. In a collectivist society, institutional changes will affect the way in which an individual in that institution will function.

Furthermore, in a collectivistic society, students are not expected to call attention to themselves by calling out answers. Thus, group work is preferred when giving assignments. Neither the teacher not the student should be put into a situation where they might "lose face." Goffman

(1967) defines face as "the positive social value a person effectively claims for himself by the line others assume he has taken during a particular contact. Face is an image of self delineation in terms of approved social attributes...the person tends to conduct himself during an encounter so as to maintain both his own face and the face of other participants" (p. 5-11). During the course of the computer mediated communication between UNM and UDG, one of the U.S. students wrote, "It is too bad that your communication system is so slow that you cannot participate fully." The response of the Mexican students was silence and they completely cut off communication. When they again began to communicate, they expressed that their feelings had been hurt because they felt that the U.S. students meant that they were slow communicators. In the Mexican context, the term "communication system" applied to the whole process of communication and therefore the comment was misinterpreted as an insult. This loss of face resulted in a break in communication. Face, however, is not just a result of individualism and collectivism. It is also related to the social distance and the relative power of speaker and addressee in the particular culture which are related to the next variable, power distance.

Power distance. Power distance is the extent to which power, prestige, and wealth are unequally distributed in a culture. In high-power-distance countries, status differences among individuals are pronounced and people accept unequal rights. Higher-status individuals are powerful and exert excessive influence during group communication. Status influence is likely to be high. In low-power-distance countries, status differences among individuals are less significant and people believe in equal rights. When groups communicate, they are likely to adopt an egalitarian approach, where higher-status individuals do not exercise excessive influence (Goodman, 1994). Status influence is likely to be low. In the CMC between University of Guadalajara students and University of New Mexico students, all students were asked to introduce themselves to the group. Both groups self-disclosed, but the UNM students self-disclosed more personal information than UDG students (During introductions and throughout the conference). The tone of self-disclosure was more formal for the Guadalajara students than UNM students. In Latin American countries, students are not generally asked, except in small seminar situations, to introduce themselves to the rest of the class. In this high-power-distance society, the information flow is from the teacher to the student and students are not expected to initiate communication or speak up unless called upon to do so. In their introduction, UDG students were more task oriented and professional than UNM students who not only talked about their professional lives but also their personal lives. This difference is related to the low-power-distance society of the U.S. where the difference among students and students and teachers is not as important a factor as it seems to be in Mexico.

Masculinity-femininity. This dimension refers to the rigidity and definition of gender roles. Masculine traits are attributes such as strength, assertiveness, competitiveness, task achievement and the acquisition of things. Feminine traits are attributes such as affection, compassion, nurturance, and emotionality (Hofstede, 1989). According to Hall (1984), female communicators are more adaptive because they are more attentive to the silent nonverbal cues. The more assertiveness, competitiveness, and ambition are accepted, the higher a country's rank on this measure. In a society characterized as being masculine, teachers encourage competition and openly praise the success of the "winners." Mexican and U.S. students were both task oriented. The U.S. students demonstrated more feminine characteristics when they became more emotional about the medium as demonstrated by the concluding remark, "Be still my beating heart," or by referring to the time saving quality of CMC by saving, "...but save me time, it does NOT!!"

High and Low Context Cultures

A second element to be considered in the development of CMC defined by Hall (1976, 1984) is high and low context cultures. High-context (HC) communication relies mainly on the physical context of the relationship for information, with little information being explicitly encoded (Hecht, Anderson & Ribeau, 1989). In HC situations the culture's information integrated from the environment, the context, the situation, and nonverbal cues give the message meaning unavailable for explicit verbal utterances. Low-context (LC) messages provide most of the information in the explicit code itself. LC messages require clear descriptions, unambiguous communication, and a high degree of specificity. LC cultures are preoccupied with specifics, details, and precise time schedules at the expense of context. According to Hall (1984), LC cultures utilize behavior systems built around Aristotelian logic and linear thinking. High-context cultures are found in the Orient and among Native American tribes who have ancestral, migratory roots in East Asia. These Native American cultures are remarkably like contemporary Oriental culture in several ways, especially in their need for high context (Hall, 1984). In an informal interview with a UNM professor who comes from a Native American Pueblo Tribe, he reported that the one thing that makes him most uncomfortable in computer mediated communication is not being given a context. He wants to know the purpose and the background for the communication, and who the participants are before he becomes involved in the conversation. He must have the context of the communication before he can be comfortable taking part.

Language

A final element of cross-cultural communication to be considered in the development of computer mediated communication is that of language. While this is an element not identified in any theoretical framework, language represents a different way of thinking as well as a different way of speaking. In the UNM/UDG communication the language issue was a major one. UDG students were given the opportunity to write in Spanish and a UNM student translated these messages, but the translation did not happen simultaneously; it took two to three days. Language became a great barrier for the UDG students because it detracted from equal participation and made it more difficult for Spanish speakers to participate. Even in cultures where the base language is the same, as in Australia and the U.S., the slang and the colloquial expressions are not. In a conference between students in the U.S. and Australia most of the participants were from the U.S. They went off on a tangent to enthusiastically discuss "Tarheels," a North Carolina football team. This discussion left Australian participants completely at a loss. Tony Dean (in Gunawardena, 1994) reflects:

> The crux of this issue as it related to Globaled exists for the author in the word: 'tarheel.' Apparently the word is not in need of explanation to Americans...However, without a key to decode its meaning, it left the Australians at a loss to understand the discussion...From that one word came the stimulus to think about the assumptions and expectations that participants of CMC

may make, and have, in communication of their thoughts... Until the picture can paint the thousand words, we are dutibound to choose wisely the thousands words to paint our picture. The wisdom will be found in the right choice of words to project context, content, and cultural character without disenfranchising the recipient by neglecting to include the legend or core to interpret the language (p. 114-115).

Tony Dean's observation focuses on the importance of paying attention to cross-cultural communication issues as we design online projects.

References

Branch, R.M. (1997, March-April). Educational technology frameworks that facilitate culturally pluralistic instruction. *Educational Technology*, 39-40.

Collis, B., & Remmers, E. (1997). The World Wide Web in education: Issues related to cross-cultural communication and interaction. In B. Khan (Ed.), *Web based instruction* (pp. 85-92). Englewood Cliffs, NJ: Educational Technology Publications.

Feenberg, A. (1987). Computer conferencing and the humanities. *Instructional Science, 16*(2), 169-186.

Garton, L., Haythornthwaite, C., & Wellman, B. (1999). Studying online social networks. In S. Jones (Ed.), *Doing internet research* (pp. 75-105). Thousand Oaks, CA: Sage.

Goodman, N. R. (1994). Intercultural education at the university level: Teacher student interactions. In R. W. Breslin and T. Yohida (Eds.), *Improving intercultural interactions: Modules for cross cultural training programs* (pp. 129-147). Thousand Oaks, CA: Sage.

Goffman, E. (1967). *Interaction ritual: Essays on face to face behavior*. Chicago: Aldine.

Gunawardena, C. N. (1998). Designing collaborative learning environments mediated by computer conferencing: Issues and challenges in the Asian socio-cultural context. *Indian Journal of Open Learning, 7*(1), 105-124.

Hall, E. T. (1976). *Beyond culture*. Garden City, NY: Anchor.

_________(1984). *The dance of life: The other dimension of time*. Garden City, NY: Anchor.

Harasim, L. (1990). Online education: An environment for collaborations and intellectual application. In Harasim, L. (Ed.), *On line education: Perspectives on a new environment*. New York: Praeger.

Hecht, M. L., Andersen, P. A., & Ribeau, S. A. (1989), The cultural dimensions of nonverbal communication. In M. K. Asante & W. B. Gudykunst, (Eds.), *Handbook of international and intercultural communication* (pp. 163-185). Newbury Park, CA: Sage.

Hofstede, G. (1980). *Culture's consequences: International differences in work-related values.* Beverly Hills, CA: Sage.

___________ (1984). Cultural dimensions in management in planning. *Asia Pacific Journal of Management, 1*(2), 81-99.

Rogers, E. M. (1986). *Communication technology: The media in society.* New York: Free Press.

Biographical Sketches

Penne L. Wilson is a doctoral student at UNM with an emphasis in Distance Learning and Multimedia. She is also an adjunct faculty member of the College of Santa Fe at Albuquerque in the Teacher Preparation Program. In addition, Wilson is a Research Assistant in the Stars Schools Evaluation Project. This project will evaluate on-line math and science programs produced by Oklahoma State University. As a teacher and administrator, Wilson has presented workshops for local, state, and regional conferences dealing with administrative, curriculum, technology, and methods topics.

Address: University of New Mexico
B05 College of Education Office Building
Albuquerque, NM 87131-0001
E-Mail: plwilson@unm.edu
Phone: (505) 254-2802
Fax: (505) 277-5553 (OLIT Program c/o Penne Wilson)

Charlotte N. (Lani) Gunawardena is associate professor of distance education and instructional technology in the Organizational Learning and Instructional Technology Program in the College of Education, at the University of New Mexico, U.S.A. She developed the graduate program in distance education at UNM. She has been active for the past decade in conducting research on distance education and educational telecommunications and has numerous publications and national and international presentations to her credit. Her current interests center around the design and evaluation of social constructivist networked learning environments, social presence theory and implications for interaction and communication, the evaluation of telecommunications-based distance education, and cross-cultural issues that influence the teaching and learning process at a distance.

Address: University of New Mexico
103 College of Education Office Building,

Albuquerque, NM 87131-0001
E-mail: lani@unm.edu
Phone: (505) 277-5046
Fax: (505) 277-5553 (OLIT Program c/o Dr. Gunawardena)

Ana C. Nolla is a doctoral candidate in the Organizational Learning and Instructional Technology Program in the College of Education at the University of New Mexico. The emphasis of her degree is Distance Education. Ms. Nolla is a Graduate Assistant in the NM North Central Association Commission on Schools, working on the accreditation of schools across the state. In addition to being a visiting lecturer at two national Chilean universities, Ms. Nolla has participated in the design and implementation of different distance education projects in Latin America, and has presented at local and international workshops dealing with mediated communication technology and distance education planning.

Address: P. O. Box 4948
Albuquerque, NM 87196-4948
E-mail: ananolla@unm.edu
Phone: (505) 246-2486
Fax: (505) 277-7285

Faculty Beliefs About Rewards for Distance Teaching

Linda L. Wolcott, Ed.D., Associate Professor
Department of Instructional Technology
Utah State University

Darren Brown, Doctoral Student
Department of Instructional Technology
Utah State University

Introduction

In today's colleges and universities, distributive technologies are changing not only the ways in which courses are delivered, but also the nature of faculty work. At many institutions, the pressure is on to establish distance education programs which offer students the convenience of learning anytime anyplace. Along with their traditional responsibilities, faculty face the added and sometimes urgent expectation to develop web-based courses with little institutional recognition of the time and effort such development and subsequent teaching involves. These demands come at a time when the academic community has been debating the nature of scholarship (Boyer, 1990) and changing faculty work (Mingle, 1993; *Work of Faculty*, 1994). Whereas participation in distance education is seen as not only representing more work but also different work, it is not surprising that institutions have encountered resistance to distance education among faculty.

Part of the resistance comes from faculty members asking themselves, "Is getting involved in distance education worth it?" "What's in it for me?" Dillon and Walsh (1992) identified rewards and incentives as key issues relating to faculty participation in distance education. More recently, a study by the National Center for Education Statistics (Lewis, Alexander, Farris & Greene, 1997) cited the lack of faculty rewards and incentives as a barrier to institutional growth in distance education to some extent at over 50% of the participating institutions. Indeed, in a survey of faculty and deans, Betts (1998) found that 3/4 of the distance teaching faculty and 96% of the non-participators saw few career advantages in participating in distance education.

What an institution values is reflected in its reward system. Recent debate has focused attention on institutional reward structures that traditionally have had inflexible promotion criteria across disciplines and have been unresponsive to differing expressions of scholarship (Diamond, 1993; Edgerton, 1993). As technology continues to accelerate the rate of change in higher education and impact the work of faculty, institutions are challenged to keep pace in matching values with relevant faculty rewards. Distance education and other forms of distributed learning are a case in point.

The purpose of this study was to further our understanding of the relationship between distance education and institutional reward structures. Based on the groundwork laid by Wolcott (1997), Betts (1998), and Wolcott and Betts (in press), the study sought to develop a scale to assess faculty beliefs about rewards and incentives in distance education.

Method

Development of the scale began with the creation of categories from themes identified from previous research relating to work motivation and faculty rewards. The study hypothesized that faculty perceptions about rewards and incentives cluster around three factors: locus of motivation, institutional values and commitment, and return on investment. Items were developed for each category, and judgmental validity evidence was gathered and analyzed. Based on these results, a draft scale consisting of 38 items was developed. The scale was prepared using a Likert response ranking, ranging from A (strongly disagree) to E (strongly agree) and was pilot tested with a sample of 46 faculty members. The sample consisted of tenure-track, research, and clinical faculty who had taught during the previous semester or who were teaching during the current semester on one of two interactive television networks.

Responses were analyzed using SPSS to obtain frequency distributions on each item; cross tabulations were conducted to identify response trends among the four categories of subjects: full professor, associate professor, assistant professor, and lecturer/instructor. Correlation coefficients were calculated between pre-selected items associated with institutional values, rewards, and perceived return on investment.

Results

Thirty-three out of 46 faculty members responded for a return rate of 72%. The sample included more full professors than associate or assistant professors. These, along with 5 individuals who classified themselves as lecturers or instructors, comprised the sample. The majority of subjects (75%) were male. Few subjects reported whether they were tenured, untenured, or not in a tenure track position; of the 13 who did respond, all indicated they were tenured. The college with the largest number of subjects was the College of Education which representing 46.9% of the sample.

Beliefs About Motivation

What motivates faculty to participate in distance education? The majority of subjects either agreed or strongly agreed with the beliefs that:

- faculty want to earn more money (63%),
- teaching distance education courses is personally rewarding (57%), and
- faculty want to extend the reach or influence of their programs.

Over half of the subjects disagreed with the statements that the opportunity to use new technologies (54%) and the opportunity to develop one's teaching skills (54%) motivate faculty.

Beliefs About Institutional Values and Commitment

Forty-five percent of the subjects strongly agreed that distance education was congruent with their institution's mission. Three other items for which the subjects reported moderate agreement were their beliefs that:

- their involvement in distance education is valued by their department chair/head (63%),
- their department chair/head is supportive of their involvement in distance education (57%), and
- distance education is a high priority at the institution (51%).

Beliefs about the Return on Investment

Faculty tended to be neutral on many of these items. The one notable exception was the item in which 45.5% of the subjects agreed that the rewards they received for teaching distance education courses were equitable to those their colleagues received for the same activity. 45.5% strongly disagreed that their efforts in distance education had earned them formal recognition within their department, college, or institution. The majority of subjects either disagreed or strongly disagreed with statements that:

- their participation in distance education earns them credit toward improving their record of research and scholarship (69.7%),
- compensation for teaching a distance education course is equitable (66.6%),
- faculty receive equitable credit for producing distance education materials (54.6%),
- the rewards they receive in return for distance teaching are equitable with respect to the amount of time and effort they invest (54.6%),
- distance education has a positive effect on their earning a merit increase (54.5%), and
- that their efforts in distance education earn them informal recognition (54%) and have a positive effect on their earning tenure or advancement in rank (51.5%).

Correlated Items

One of the major assumptions underlying the development of the scale is that values held by the institution influence the nature and perception of institutional rewards. Pearson product-moment correlation coefficients were calculated between items related to institutional values and commitment and those items concerned with extrinsic rewards. Data analysis yielded several highly correlated items:

- The belief as to whether their involvement is valued by the department chair/head has a direct relationship with the belief about whether their participation in distance education earns them credit in annual performance reviews with the department chair/head (r=.633, p<.01).

- In turn, this belief is highly correlated with the faculty's perception about whether their efforts earn them informal recognition (r=.674, p<.01) and merit increase (r=.734, p<.01), and have a positive effect on their earning tenure and/or advancement in rank (r=.712, p<.01).
- Faculty perceptions regarding whether their participation in distance education is valued by those who serve on their tenure/advancement committee is also highly correlated with their beliefs as to whether their efforts have a positive effect on their earning tenure and/or advancement in rank (r=.690, p<.01), and earn them credit in annual performance reviews with the committee (r=.847; p<.01).
- Further, the latter belief is strongly related to faculty perceptions about whether their efforts have a positive effect on their earning tenure and/or advancement in rank (r=.756, p<.01) and whether they earn credit for improving their records of teaching (r=.692, p<.01) and service (r=.675, p<.01).
- Finally, there is a strong relationship between faculty perceptions concerning whether their participation in distance education earns them credit in annual reviews both with their committees and their department heads (r=.712, p<.01).

Faculty beliefs as to whether their dean and the central administration value their involvement are each correlated (r=.635, p<.01 and r=.567, p<.01, respectively) with their belief as to whether their efforts in distance education have a positive effect on their earning tenure and/or advancement in rank. This belief is also reflected in the moderate relationship found between it and the beliefs about the extent to which distance education is a high priority at the institution (r=.539, p<.01) as well as within the academic unit (r=.517, p<.01).

In addition, with respect to the belief about whether the central administration values their participation, there was a direct relationship with the faculty's belief as to the extent to which the rewards they receive in return for their participation are equitable with respect to the amount of time and effort their invest (r=.609, p<.01). Faculty perceptions concerning whether distance education is personally rewarding is moderately correlated with their belief about the degree to which it is professionally rewarding (r=.772, p<.01). Each is also equally correlated (r=.503, p<.01) with the perception as to whether the returned rewards are equitable to the time and effort invested. There were no statistically significant negative correlations.

Conclusion

Results from the pilot administration of the faculty beliefs assessment scale corroborate previous findings that faculty are highly motivated to participate in distance education by intrinsic rewards (Taylor & White, 1991; Betts, 1998; Wolcott & Betts, in press). Responses to the scale strengthen the conclusion in Wolcott's (1997) study that the department chairperson/head plays a pivotal role in faculty rewards for distance education. At the same time, however, current findings also confirm many of the concerns that Wolcott raised about distance education and its questionable return on investment especially with respect to tenure and promotion. Negative perceptions of the quid pro quo for teaching distance education courses call into question the equity of rewards, and heighten concerns that faculty are not receiving recognition, merit increases, or credit based on this growing dimension of their work. According to preliminary information from faculty beliefs, teaching distance education courses still poses a risk to junior and untenured faculty members that their efforts will go under-valued and un-rewarded.

The significant relationships identified among items confirm previous qualitative findings about the connection between values and rewards (Wolcott, 1997; Wolcott & Betts, (in press), and add another dimension to our understanding. They give us confidence in the constructs and assumptions underlying the development of the scale. The high number of correlated items plays up the importance of those in positions to provide credit and reward to faculty for a range of teaching, service, and research activities. Further, they speak to the importance of articulating and communicating institutional values. The current line of research into faculty beliefs about the rewards and incentives in distance education continues with the revision of the scale and its validation with a larger national sample.

References

Betts, K. S. (1998). Factors influencing faculty participation in distance education in postsecondary education in the United States: An institutional study. (Doctoral dissertation, The George Washington University, 1998). *Dissertation Abstracts International*, 59/07, 2376A.

Boyer, E. L. (1990). *Scholarship reconsidered: Priorities for the professoriate*. Princeton, NJ: Carnegie Foundation for the Advancement of Teaching.

Diamond, R. M. (1993). How to change the faculty reward system. *Trusteeship,* 1(5), 17-21.

Dillon, C. L. & Walsh, S. M. (1992). Faculty: The neglected resource in distance education. *American Journal of Distance Education,* 6(3), 5-21.

Edgerton, R. (1993). Re-examination of faculty priorities. *Change*, 25(4), 10-25.

Lewis, L., Alexander, D., Farris, E., & Greene, B. (1997). *Distance education in higher education institutions*. U. S. Department of Education, National Center for Education Statistics (NCES 98-062).

Mingle, J. R. (1993). Faculty work and the cost/quality/access collision. *Trusteeship*, 1(5), 11-16.

Taylor, J. C., & White, V. J. (1991). Faculty attitudes towards teaching in the distance education mode: An exploratory investigation. *Research in Distance Education*, 3(3), 7-11.

Wolcott, L. L. (1997). Tenure, promotion, and distance education: Examining the culture of faculty rewards. *The American Journal of Distance Education,* 11(2), 3-18.

Wolcott, L. L., & Betts, K. S. (in press). What's in it for me? Incentives for faculty participation in distance education. *Journal of Distance Education.*

Work of faculty: Expectation, priorities, and rewards. *Academe* (Jan.- Feb. 1994), 35-48.

Biographical Sketches

Dr. Linda L. Wolcott is an associate professor and the Interim Assistant Dean for Information and Learning Resources at Utah State University. She teaches courses through and about distance education, and conducts research on faculty development issues. Dr. Wolcott has made numerous conference presentations about distance education and is the author of several widely-cited publications. She is the recipient of the ECT Foundation's Qualitative Research Award in 1998 for her study of faculty rewards and incentives.

Address: Information and Learning Resources
Utah State University
Logan, UT 84322-3065
E-mail: linda.wolcott@usu.edu
Phone: (435) 797-2687
Fax: (435) 797-2650

Darren Brown is a doctoral student in Instructional Technology at Utah State University. He has a background in psychology and family and human development. Darren's research interests include distance education as well as change in human and educational systems.

Address: Department of Instructional Technology
Utah State University
Logan, UT 84322-2830
E-mail: dbrown@usu.edu
Phone: (435) 797-2424
Fax: (435) 797-2694

Beyond the Laboratory:
Observational Astronomy on the Internet

Charles A. Wood and Mike Gerszewski
Department of Space Studies
University of North Dakota

Four years ago the Department of Space Studies at the University of North Dakota initiated SPACE.EDU, one of the first complete MS degrees available via the Internet (www.space.edu). At that time the significant educational achievement of holding live chat seminars with students around the world was sheer exhilaration. Since then, Space Studies has developed a variety of educational experiences to provide intensive and hands-on opportunities to Internet students. These innovations also improve the education of campus students. In this short note we describe briefly two technologies used to propel SPACE.EDU beyond normal Internet learning: java-based simulations, and an online scientific instrument - an astronomical observatory.

SPACE.EDU

A number of universities provide various important components of space education. Students interested in space can earn degrees in aerospace engineering, planetary science, and even aerospace medicine. But there are only two programs in the world which offer graduate level interdisciplinary space studies degrees. The oldest and most successful program is at the Department of Space Studies at the University of North Dakota. Founded by David Webb in 1987, the Space Studies program offers courses in space science, technology, law, policy, medicine, history, commerce and military applications. The Department has awarded more than 350 MS degrees, and Space Studies alumni now work with NASA, NOAA, other government agencies, aerospace contractors, consultants, and within the US Air Force Space Command.

Students have come to our North Dakota campus from all over the USA and abroad to earn the unique Space Studies MS degree. But many potential students, already established in aerospace careers, can not spare the time to come to a campus program for 18-24 months. To serve such professional students, in January 1996 we began a program called SPACE.EDU - the delivery of the Space Studies degree via the Internet. More than 300 students in 40 states and 15 countries have taken courses in this new SPACE.EDU program. Internet students watch videotapes of campus lectures, participate in live weekly seminars using Internet chat and streaming audio, take online exams, submit papers and homework via email or as web pages, and conduct all other student activities (registration for classes, advisement, purchasing texts, buying UND mugs and sweatshirts, etc) over the Internet. Both students and faculty can travel to business meetings or vacations, and still participate in their weekly seminars using laptop computers. Students have been very pleased with the program quality and great flexibility of SPACE.EDU, and partially due to their advocacy, a PhD program is being planned. We anticipate someday having students and faculty onboard the International Space Station and at a lunar base.

Simulations

Scientists learn by four methods: reading the literature, observing nature, doing real world experiments and modeling (simulating) natural processes. Students typically learn by participating in similar activities: Traditional lectures, field trips, and lab exercises. But rarely do students learn to understand by manipulation of simulations. Scientists have used the power of the computer to model mathematically the interiors of stars, biological evolution, and the peopling of the New World. As computers evolved, simulation results changed from simple tabular printouts of numbers to full color and full motion visualization which are often remarkably insightful and beautiful.

Java applets—short programs which downloaded from web sites and run on students' own computers—permit Internet students to learn about physical processes simulations. Space Studies' first two Java-based simulations were *Java-Splat* and *Java-Boom*. *Java-Splat* models the cratering of a planetary surface, creating circles on the computer screen with diameters and numbers controlled by students. Comparison of simulations with pictures of the lunar surface provides a graphic visualization of the different cratering conditions on the ancient lunar highlands and the younger lunar maria. *Java-Boom* models explosive volcanic eruptions - students can see the effects of changing variables including gas velocity, crater diameter, and gravity. More recent Java simulations include blackbody radiation and Daisyworld (http://www.space.edu/applets/).

ACIT: An Online Astronomical Observatory

Grade school teachers commonly use hands-on projects, for educational research consistently shows that learning is enhanced greatly by manipulating real objects. For space studies, the most significant tool for students to learn by using is the telescope. Teaching a traditional Observational Astronomy class to campus students involves classroom lectures about telescopes and an introduction to astronomical objects that can be investigated through the acquisition and analysis of telescopic data. To make this experience available to Internet students requires remotely controlling a remarkably large variety of activities.

We started our design by identifying the decision steps that a campus student would pursue to successfully carry out astronomical observations and analyses. Surprisingly, the first step is deciding if it is worth driving ten miles out to the observatory to use the telescope. This is not a philosophical question, but a meteorological one - is the sky cloud-free and likely to remain that way long enough for useful observations? There follows a series of decisions and steps to open the roof, power up the scope, align the scope, point the scope only at objects above the horizon, take properly exposed electronic images, archive the images, stow the telescope in a safe, home position, turn off the drive motor, and close the observatory roof. A student must do all of these activities, perhaps thousands of miles away, with limited feedback and no previous experience with a telescope! An undetected failure of the equipment or in following the exact procedures could seriously damage the telescope and/or camera. The amazing fact is that during our initial semester of using an online observatory, nothing got broken!

After analyzing the decision steps we realized we had to build a totally new observatory specifically designed for Internet observing. Since our main scientific interests are small members of the solar system we named the observatory facility ACIT: Asteroid and Comet Internet Telescope. Two of our main considerations were to reduce operational complexities and to use commercial off the shelf products as much as possible. Traditionally, telescopes are housed in astronomical domes that rotate to reveal slivers of the sky through vertical slits. We didn't want to have to program a dome to rotate to follow the pointing of the telescope, so we eliminated the rotating dome. ACIT uses a low rectangular shelter whose flat roof rolls completely off, exposing nearly the entire sky to view. Since strong winds are a danger to both telescopes and roll-off roofs, we included at the observatory a weather station with wind speed and rain instruments. If rain starts or high winds come, the weather station data triggers an automatic closing of the observatory.

We chose a 16" aperture Meade LX200 Schmidt-Cassegrain telescope, which, at the time, was the only instrument that could be completely controlled by computer. We mated the scope with the SBIG ST-8 CCD camera, which has a large light-sensitive chip and thus a relatively large field of view. CCD (charge coupled device) electronic cameras are much more sensitive to faint star light than are photographic films, they also are controlled by a computer, and their images can be sent digitally to observers. Fortunately, planetarium software is also highly developed; we used Software Bisque's *theSky*, which displays a starmap on a computer monitor and can move the Meade telescope to objects selected by a mouse click. A number of advanced amateur astronomers had used this specific combination of telescope, camera and software to control their telescopes from within the confines of a warm room at the end of a 25 to 50 foot cable. No one previously had built a telescope, ccd camera and an entire observatory, that could be operated unattended over the Internet by students. Internet operation insures that ACIT can be used by any Space Studies student in the world without long distance charges and without buying special software.

The basic ACIT system consists of a telescope, CCD camera, observatory, two computers and a user. One computer at the UND campus is used as a web server and contains all of scheduling and user information. Before an observing session, the student signs up for an open time slot to use ACIT. This is all accomplished through a database and web interface. When the student's time to observe approaches, she logs in to the ACIT main web server and is linked to the ACIT computer at the observatory site, where she gains full control of the roll-off roof structure, telescope and camera. The link between campus and observatory computers is accomplished through a GNU Public License program, *WinVNC*. *WinVNC* is a screen share program much like Symantec's *PCAnywhere*, but with a programmer configurable client, which allows us to tailor the client to our specific needs. The transmissions between the user and ACIT computer travel through an 8 Mbps wireless networking connection. This is a dramatic improvement over a modem connection when sending screen images of this size and resolution.

Most of the telescope control software is commercial, such as Software Bisque's *theSky* and *CCDSoft*. Control of the building itself is accomplished through National Instruments' *LabView*, an electrical engineering programming language. We have written programs to read the weather data, open and close the roof, and control several electrical outlets through the computer. Some of the control is also accomplished through Bob Denny's *ACP*, which allows a programmer to write customized telescope control software.

The requirements of our project are such that every piece of equipment that the observer uses must be controllable through the computer. This made our decisions somewhat easier. We were basically required to use a Meade LX-200 series scope because of budget constraints and its ease of use through a computer interface. Also a contributing factor in this decision was the fact that Meade was the only company producing a telescope with the slewing capability we required at the time we bought it. We were also required to use a CCD camera, since it is the only camera that will almost instantly make the image available to the computer. Our choice of *LabView* was determined by our recruiting of UND electrical engineering students to design the observatory system. We have since realized that another option would be to use an X-10 home automation system at a much lower cost, more flexibility, and a smoother learning curve for the programmer!

From January to May, 2000 the first Space Studies Internet class in Observational Astronomy was taught. There were 25 students from 15 states and Canada, Switzerland, Korea and Australia. The students were very excited to participate in this historic class (which was completely oversubscribed) and were anxious to observe. But rather than simply posting a checklist on the course web site (http://www.space.edu/campus/spring2000/425/) and wishing them the best of luck, the class held weekly chat sessions to discuss astronomy targets, how to use the telescope and how to use the magic of image processing to transform a boring image into a sensational one. We also opened a chat room for students to use while they were observing. Thus, a faculty member or lab assistant could visit students while they were observing to offer assistance or share the excitement of real time astronomy. After a few weeks, the students began to pass on the open and operating ACIT facility to the next scheduled student, rather than each one closing down, and the next one opening up. Students would help each other acquire needed images (say of an asteroid) or would share observing time slots.

From the students' point of view the observational astronomy course was really an applied computer science course. Every aspect of control of the telescope and analysis of data used computer programs that students had to learn to use. At first, we recommended that students use online java applets for image enhancement and analysis, but this did not provide the capabilities and ease of used needed. One student took the initiative to contact Software Bisque, who agreed to provide *theSky* and *CCDSoft* at a substantial educational discount. Most of the students elected to buy this software—the next time the course is taught it will be required. Students also needed more instruction on image enhancement; we will also provide more step by step instructions for that in the future.

Most technical problems were due to the Meade telescope not working as expected. The telescope did not point as accurately as needed to have the object appear within the CCD camera's field of view. We solved this problem by using an optical focal reducer, which widened the field of view. Unfortunately, it also caused severe vignetting which was difficult to correct with the original software students used. The Meade telescope is also supposed to return to a known homing position, allowing startup the next night without aligning with stars. This feature

443

never worked, so we wrote software to duplicate this function. Finally, the design of the telescope meant that the primary mirror shifted small amounts as the scope was pointed to different parts of the sky. This caused many images to be out of focus – stars looked liked cheerios or donuts rather than pinpoints of light. We are now modifying a commercial electronic focuser to automatically focus. For anyone interested in duplicating ACIT, we have suggestions to eliminate most technical problems. New telescopes and mounts greatly reduce most of the difficulties we experienced, and our evolved software makes it easier for students to use the system.

Despite problems (and the potential for complete disaster!), this was the probably the best course the instructor has ever taught. Students were excited throughout the semester, and even printed a limited edition course tee shirt commemorating the course. We found that a great sense of camaraderie grew up around the course. Scheduled 50-minute chat sessions commonly extended to 90 minutes, and students dropped in—in the middle of the night—to chat with others who were observing. One remarkable intercontinental episode demonstrates the unusual collaboration. A student in Michigan was having a problem, but because she had only a single telephone line she did not want to cut the ACIT connection to call the help line. Just then, the student from Switzerland dropped into the Observers chat room, found out about the problem, and telephoned the instructor in North Dakota for a solution!

Acknowledgements

We thank NASA for partial financial support from the North Dakota Space Grant Program and the Learning Technologies Program. We also thank Ryan Kramer, Andrea Mattern, Jennifer Heldmann, Christopher Schmidt, Joseph Rydell,, Blaise Mibeck and Patricia Langwost for help in designing, building and operating ACIT.

Biographical Sketches

Charles A. Wood is Professor and Chairman of the Department of Space Studies at the University of North Dakota. He led the development of SPACE.EDU and VolcanoWorld (volcano.und.edu), one of the largest and most visited science education sites on the web. Wood has enjoyed observing the heavens for nearly 50 years, and now appreciates being able to do it inside, away from mosquitoes and cold.

Address: Space Studies
University of North Dakota
PO BOX 9008
Grand Forks ND 58202-9008
E-mail: wood@space.edu
Phone: (701) 777-2480
Fax: (701) 777-3711

Michael T. Gerszewski is a third year Computer Science Major, with hands-on experience in computer systems through the Williston Public School District. His involvement in the Space Studies ACIT project included systems design, implementation and maintenance. He has co-authored a poster at the 30th Lunar and Planetary Science Conference at Johnson Space Center, and co-authored a poster for a North Dakota EPSCoR poster session.

Address: Space Studies
University of North Dakota
PO BOX 9008
Grand Forks ND 58202-9008
E-mail: mgerszew@cs.und.edu
Phone: (701) 777-2480
Fax: (701) 777-3711

❖ Workshops ❖

Arguing Online: Designing Writing Classes for Interaction

Marilyn Barry
Director of Writing and Associate Professor
Alaska Pacific University

Sharon Sibbald
Instructor in Writing
Alaska Pacific University

Interaction is a critical success factor on two fronts in online writing courses. First, interaction with the instructor and peers supports on-going involvement and successful course completion. Second, in learning to write—especially claim-based arguments—peer interaction is an essential part of the draft and revision process. Although axiomatic that writers need readers, in a class that focuses on argumentative writing for perhaps the first time in students' academic careers, these writers need quick responses in order to establish self-confidence in the relevance and feasibility of a writing project and to build clarity of writing style. Instructors can be counted on to provide commentary, but often more importantly, students also need interaction with other students to help judge the value of the topic and the appropriateness of the approach to it.

Encouraging Interaction

Some opponents of distance education have worried about the lack of personal contact students have with instructors and other students. Although it's clear that technology-based education does not provide the intensive face-to-face classroom contact most of us are used to, interaction with individual students and between small groups of students can be implemented with technology-based education and done so with a great deal of success. Using Internet technology, you can work with students to facilitate student/instructor and peer interaction.

If at all possible, it's highly desirable to have a short period of residency in which students and instructors can come together for a week of in-class coursework. If there are gaps in technology skills that need to be addressed or placement tests that need to be administered, this is the time for them. This residency period can also be utilized to begin the process of forging a group dynamic that will, one would hope, carry through to the end of the coursework. One way to begin this is to assign peer interviews. Students can be paired to produce short biographies of each other that can then be posted on the course homepage beneath digital photos of each student. If this type of contact isn't possible, students can still exchange email addresses and produce short biographies electronically. The important thing is to begin to establish interaction between students in the class as soon as possible.

Synchronous chat rooms require all students to be available at a set time to participate in real time discussion. Not only do these chats provide a platform for discussion of the class work, but they serve to promote the type of interaction between students that will become central to the group dynamic. Rapport between all members of a class can be encouraged by something as simple as a bit of casual banter during the opening of the session. Even topics of personal concern to individual members might be broached. For instance, last semester one student became a father. People asked each chat session about the baby's progress and the student's assimilation to the role of a father. This type of interaction usually takes about five minutes of the hour session, and it is well worth the brief cost of time in that establishing a basis of instructor/peer interaction will promote a constructive framework which is essential for claim-based writing classes.

Perhaps not surprisingly, students appear to be much less inhibited by dialogue in a chat room than they are in a classroom. It's rare that students do not contribute to an online discussion, but if they appear to be non-responsive, usually little prompting is required to bring them back into the discussion. It could be argued that chat rooms foster a type of Socratic dialogue since the instructor is less likely to monopolize the "floor," and the student more likely to become engaged, ask and answer questions, and ideally bring away from the class a tool for inquiry. One difficulty with chat room discussion is finding a time that is suitable for all members of the class since many distance education students are older and/or have multiple responsibilities, but this problem is unlikely to be insurmountable.

Bulletin boards allow for asynchronous discussion and encourage the process aspect of writing. To stimulate class discussion, articles from online newspapers or newsmagazines can be posted to the bulletin board. Students can be required to read and comment on the article; a list of specific questions may be used as a prompt although students may also simply react to the article. In any case, the idea is to create a discussion on par with what might occur in a classroom. Clearly, however, differences emerge. For better or worse, students have much more time to consider a response to an online topic; this may enhance the quality of the response or it may mean that the impetus to respond is diluted. If a common text reader is used in the class, discussion of individual readings or aspects of chapters may also be used to focus discussion.

Also, for each writing assignment, students in argumentation are required to post topic and ideas about the claims they are developing, as well as to respond to other students' postings. Again, a specific list of questions can be posted as a prompt for comments. Since argumentative writing is primarily issue-based, and many times students share similar concerns about these issues, they are often apprised of and knowledgeable about topics and can suggest interview and research possibilities to each other. This interaction effectively "hones" the claim before the first draft is begun. It also allows the instructor to view all responses to each topic suggestion and perhaps offer additional comments to help the student to a more articulate and workable claim. Any comments of this sort by the instructor should be conducted via email, not posted to the bulletin board, as instructor comments may carry such weight that they effectively shut down the peer interaction.

Online instruction can make more visible the processes involved in writing. Students are strongly encouraged to revise drafts several times before submitting a final version, and these drafts are also posted to the bulletin board. Classmates respond to these versions, and although initially most students respond on a emotional level to the content of an essay, guidance by the instructor and referral to a list of specific goals for an argumentative paper can help "retrain" readers to avoid being unnecessarily disputatious or enthusiastic about the content of the claim and instead read for coherence, credibility and persuasiveness. Stressing process not only empowers students to develop their own ideas but also provides a safeguard against plagiarism.

Strategies for Instructors

It's helpful to set up a separate word processing folder for the electronically submitted work of each student in the class. The implications for organization are clear. If multiple drafts of each writing project are required, all submitted drafts should be saved; having a separate folder for each student makes sense. Once a class is completed, folders for individual students can be deleted.

In order for a class to be helpful for the individual, comments must be frequent and specific. We comment extensively on all drafts and advise keeping two copies of each draft--one "as-submitted" and one with instructor comments. As mentioned above, this instructor feedback should always be via email, not posted on the bulletin. Commenting electronically can be challenging because not everyone uses the same computer program; however, we've found that the following strategy generally works. By creating two side-by-side cells of a graph, you can move the student text to the left cell and have a blank cell on the right. You will then be able to scroll down the right cell and make comments where appropriate, next to the text in question, much like comments in a margin.

An alternative (or possibly additional) strategy is to use brackets and colored type in the body of the text itself, which only works for those who have the compatible software. However, since most people operate on Windows and Word, there is typically no problem with the transmission of the colored type. This allows for small comments within the body of the text itself--perhaps those dealing with word choice, punctuation, or matters of grammar.

Available Resources

Instructors should have some working familiarity with area libraries' electronic databases. Data retrieval is in a state of continual flux, so be prepared to ask local reference librarians for current information including relevant passwords that may be necessary to log on. In any case, you will find that state library systems lease databases that allow residents access to articles from thousands of publications, many of them full text, that can be downloaded on your home computer. For instance, Alaska uses Ebsco and InfoTrac, but Washington uses ProQuest and InfoTrac. They have similar features, but Alaska allows home users access to both databases and Washington allows home users only InfoTrac access. A library card is required to use InfoTrac in Washington, but only a password and state residency are necessary for Ebsco in Alaska. Instructors should be in a position to pass the relevant information on to students so that they have a reliable source of credible research materials.

Students should be encouraged to use library databases that provide for limitation features such as peer-reviewed or refereed texts and discouraged from using information obtained through regular Internet search engines like Yahoo or Excite, for instance. It is difficult to judge the credibility of sources obtained from such a search since, obviously, anyone can post anything to the Internet.

Because many articles and essays are legally available via the Internet and database searches, the importance of the chosen textbook should be its value as a resource for specific insight about the crafting of arguments and essays; a collection of essays may or may not be useful, depending on instructor preference. Many texts also contain information about digital resource protocol, but the instructor should check that information and warn students about potential problems associated with suspect sources on the Internet.

Although the Internet has opened a new door for plagiarism opportunities, it has also provided opportunities for instructors to check plagiarism. Plagarism.org is just one example of a web-site devoted to the prevention of plagiarized material. Others can be readily found using a common search engine. Many of these sites offer free trials but charge for regular usage. Even "student" papers purchased from the Internet will be eventually recorded on these sites because each time an instructor submits a paper for a plagiarism check, it's also recorded as a source for future checks.

With rapidly developing new technology, the potential for creating new learning strategies increases. The direction of this new technology appears to be conducive to the type of interaction and process necessary for guiding students through argumentative writing.

Biographical Sketches

Marilyn Barry is an associate professor of English at Alaska Pacific University, where she has directed the writing program since 1994. She developed and has taught all four levels of writing courses for APU's Rural Alaska Native Adults (RANA) distance education program. She holds a Doctor of Arts Degree in Old and Middle English and Linguistics from the University of Oregon and has taught for 22 years in universities in California, Washington and Alaska.

Address: Alaska Pacific University
4101 University Drive
Anchorage, AK 99508
E-mail: mbarry@alaskapacific.edu
Phone: (907) 564-8233
Fax: (907) 562-4276

Sharon Sibbald is an instructor in composition at Alaska Pacific University, where she teaches both on campus and on-line in the Rural Alaska Native Adult (RANA) program. She tutors in person and on-line in the Writing Center and has designed WebCT courses. She has taught also at the University of Alaska and holds the MA in English from the University of California, Berkeley.

Address: Alaska Pacific University
4101 University Drive
Anchorage, AK 99508
E-mail: sib@corecom.net
Phone: (907) 694-4097
Fax: (907) 694-4098

More Advances in Web Pedagogy: Fostering Interaction and the Online Learning Community

Curtis J. Bonk, Ph.D, Associate Professor
Educational Psychology and Instructional Systems Technology
Indiana University

Vanessa Dennen, Assistant Professor
Educational Technology
San Diego State University

Even with the proliferation of recent announcements regarding distance learning, one rarely finds useful information regarding how to teach online. Furthermore, most Web course development tools have yet to match the pedagogical needs of higher education. Just how much do Web-based learning tools foster the development of student thinking skills, collaboration, and active learning? How can one develop into a more effective online learning instructor or teach others how to become one? And how can one teach online from a learner-centered perspective using simple tools or courseware one's university has developed or adopted?

The tools for online interaction and communication are proliferating. It remains unclear how fast and effectively such tools are embedded in online teaching and learning environments. It is also undetermined who the major players will be. What is clear is that there are many pedagogical opportunities awaiting instructors on the Web. The planning and integration of such activities is perhaps the most important aspect of online teaching. It is also vital to understand how different techniques might foster the creation of online learning communities

Instructional Strategies

There are many pedagogically and instructionally interesting activities available for online learning environments. Some of these pedagogical strategies heavily employ reading and writing (see Table 1). One popular and effective example is the starter-wrapper technique. In this method, the starter summarizes the chapter and issues for a particular week, providing questions meant to jumpstart discussion. In the wrapper role, students reflect on issues and themes discussed during the week or unit as well as issues that remain open. Those who are not starters or wrappers might take on various roles such as devil's advocate, pessimist, or optimist. Students are the teachers here! The instructor might respond in this discussion as a second wrapper by pointing out what topic and issues were accurately portrayed and what issues still need further discussion and clarification.

As indicated in Table 1, there are many other reading and writing techniques for online environments. These activities may be used for formative feedback (minute or muddiest point papers), cooperative learning (jigsaw), dealing with controversial topics (debate) and reflection (field observations). The permanency of the electronic text, however brief, and the ability to comment on or revisit it are motivating aspects of online learning.

Table 1. Online Reading and Writing Techniques (Bonk, 1998; Bonk & Reynolds, 1997)

1. Starter-Wrapper (Hara, Bonk, & Angeli, 2000)
   a. Starter-Wrapper—Starter reads ahead and starts discussion and wrapper (and perhaps the teacher) summarizes what was discussed; others participate.
   b. Starter-wrapper with roles--same as #1 but include roles for other participants (optimist, pessimist, devil's advocate, coach, questioner, mediator, connector, commentator, bloodletter, etc.).
   c. Such discussion occurs with students from other countries and classrooms. Each site alternates starting and wrapping the weekly discussion. Perhaps pair students at remote sites for starter and wrapper roles.

4. Article Discussions
   a. Reading reactions with free choice: List all the articles in their reading packet within an online discussion tool. Next, have students decide which articles they want to discuss and reply to.
   b. Reading reactions in teams: Assign students to read and react to a particular set of articles that they are responsible for, and, near the end of that discussion, summarize and comment on the discussions of another group.
   c. Students decide on articles: Have students select a set number of articles to read for the semester and have them post summaries of some of them to Web as well as respond to the summaries of their peers.
   d. Reading reactions limited choice—students are given a set of articles. They post to a set number of articles and react to posts of a certain number of peers.

3. Jigsaw—divide up into groups and then divide work or chapters within groups (e.g., member #1 reads chapters 1 & 2; #2 reads 3 & 4, etc.). Students discuss ideas and findings in an electronic conference and share what learned.

4. Web Explorations and Readings—students search for electronic articles on a topic and summarize, categorize, and/or react to them.

5. Field Observations reactions—students observe in field and reflect on how relate to current chapter material.

6. Structured controversy--assign two students a pro side and two students a con side and debate an issue electronically and then switch roles and come to compromise; later post a reflection on the compromise positions of 1-2 other groups.

7. Topical discussions
   a. List possible topics for discussion and have students vote on them and sign up to take the lead on one or more weeks.
   b. Have students brainstorm list of possible conferencing topics and then take responsibility to lead a week of discussion.

8. Cases
   a. Post case situations and have students respond in small groups.
   b. Have students generate 2-3 cases during semester based on field experiences or experience and respond to 6-8 peer cases.
   c. Place set of cases on Web and link to a bulletin board system or conferencing tool for them to discuss. These cases can be used as collaborative quizzes that instructors and students from other universities can use.
   d. Post 2-3 cases for each small group to discuss and answer (these might be on their exam) and all groups must respond to the solutions of one other group.

9. Debates
   a. Reading reactions as debates with free choice: Assign a set of articles to read, but their reactions on one or more of these must be in the form of a debate.
   b. Reading reactions in teams: Assign students to read a particular article or set of articles and also assign to pro and con sides of a debate on such reading(s).

10. Minute or muddiest point papers--have students send you 1-2 minute reflections via e-mail perhaps to recap a class or to summarize things that remain unclear.

Table 2. Other E-Learning Pedagogical Ideas

1. Ice Breakers and Closing Activities (Thiagi, 1998)
    a. Eight Nouns Activity: Have students introduce themselves using eight nouns and then explain why they choose each noun.
    b. Coffee House Expectations: Have everyone post 2-3 of their expectations for the course in the online coffee house.
    c. Treasure Hunts: Have everyone list interests, where born, hobbies, favorite places to visit, job, major, etc. and then have them find one thing in common and one thing different about each member of the class.
    d. Brainteasers: Post a crossword puzzle, scrambled saying, competition, riddle, dilemma, or "IQ test" and see who can solve it.
    e. Psychic Massage and Positive Strokes: At the end of the semester or unit, have students nominate a student for whom they must all compliment for his or her contributions to the online class ("the best thing I like about (name) is".
2. Scavenger Hunt: Send students on an online scavenger hunt. Such a technique is a way to acclimate them to using Web technologies.
3. Voting and Polling: Have students vote on issues before class and then pull out the minority views at the start of class before the dominant students dominate (tools like SiteScape Forum and eGroups have a polling and voting tool).
4. Interactive Peer and Guest Commenting
    a. Link Ratings: Have students not just suggest Web links for the class but rate or rank those suggested by their peers.
    b. Profile Commenting: Have students comment on what they have in common with their peers directly in their peer profiles and rate degree of commonality.
5. Peer Feedback Roles
    a. E-mail Pal or Web Buddies—assign everyone a partner to comment on his or her work (privately or publicly) and generally help each other out during the semester such as provide peer feedback on self-tests and assignments.
    b. Critical Friends—Assign students a critical friend who analyzes and critiques one's work as well as points out positive aspects of one's work and provides additional support where deemed necessary.
6. Roundrobin activities: Have students start answering a question or topic and forward their partial answers to someone in their group who adds to it and passes it on till it circulates to everyone in the group. Share these solutions, case analyses, stories, etc., with either the entire group or class.
7. Gallery Tours and Publishing of Student Work: Post student work to Web as a classroom legacy or archival record to display course expectations to future students.
8. Symposia: Have an online panel(s) or symposium(s) of student experts (or practitioners) at the end of the semester after students have gone deep into a topic.
9. Brainstorming: Have students brainstorm ideas on the Web and then rank and rate the ideas generated. Calculate average ratings and distribute or create a top ten list.
10. Guest experts: Bring in a guest expert to discuss issues in a real time chat with preset questions or spontaneous discussion or in a weeklong asynchronous discussion.

Whereas Table 1 focuses on reading and writing activities, Table 2 lists online instructional activities concerned with student interaction, publication, and community building. Activities mentioned here include icebreakers and closing activities, scavenger hunts, polling or voting, symposia, and online publication of student work. In terms of ice breakers, we have found that having students post eight nouns that best represent their personality is highly informative; the first few may come easy, but eight nouns force students to open up. Along these same lines, the critical friend, Web buddy, or e-mail pal methods, also listed below, are ways to encourage student interaction and direction. Having the ability to contact peers reduces attrition rates while raising student satisfaction.

Students might also chat with peers in their class who form panels or experts or who are brainstorming in small groups. Other tools allow students to comment on or rate the work of their peers. Average peer ratings might be highlighted as in emerging Web sites (e.g., http://www.merlot.org or http://CourseShare.com). If students know that there is an authentic audience for work they are likely to be more selective and reflective. Having a gallery of student work is not only motivational for current students, but it can become a model or standard for future students.

Online Communities

Online communities are definitely not easy to establish. Community psychologists suggest that communities require four key components: (1) membership; (2) influence; (3) fulfillment of individual needs; and (4) shared events and emotional connections (McMillan & Chavis, 1986). Sensing that online communities were different than flesh and blood ones, Schwier (1999) noted that successful online communities: (1) incorporate prior experiences and explicitly share culture; (2) provide identity of groups and members through team-building and celebrations of accomplishments; (3) allow members to share products, solutions, and ideas; (4) encourage diverse membership and participation; (5) foster and respect individual expression as well as consensus; (6) allow members a chance to explore ideas as well as determine learning agendas; and (7) celebrate individual accomplishments as well as group identity. Based on such criteria, a learning community is a group of individuals who are interested in a common topic or area who engage in knowledge related transactions as well as transformations within it (Fulton & Riel, 1999). A community of learners is apparent when learners know and value each other, discuss common interests, support each other's needs, share control and responsibility, and take risks in a trusting atmosphere (McLoughlin & Oliver, 1999). They take advantage of the opportunity to exchange ideas and learn collectively (Bonk & King, 1998). In effect, there is a vital need for shared experiences or history and common language to understand, express, and live that history.

Schwier further contends that certain conditions need to exist for nurturing a learning community such as a leader setting the tone, transparent technologies to foster task completion and the development of interpersonal relationships, a safe and comfortable environment for participation, and an emphasis on narratives and story telling. He then describes how these elements play a role in the formation, maturation, and decline or metamorphosis of the learning community. Others point to the need for creating and inventing ideas and products, joint goals and milestones, online learning support and advice, shared expertise, cultural norms or practices, feelings of commitment and trust, and opportunities to contribute to and develop the online community (Barab & Duffy, 2000; Kulp, 1999). Barab and Duffy, in fact, point to the need for ritual, common practices, and regularly scheduled events as well as a purpose or mission statement. There is also a need for learners to negotiate and co-construct knowledge and apply that knowledge to lived experiences.

Linking Instructional Strategies to Learning Communities

Before selecting a particular instructional strategy, online instructors must consider how it impacts on the learning community that he or she is attempting to foster (Bonk & Cummings, 1998). The instructor must create an open, inviting, and positive tone. Students should feel safe to contribute to discussions and course activities. Frank student listing of expectations and personal experiences might also help develop shared knowledge and interests. Giving students more power and responsibility might also help in that regard. Flexibility is king!

In addition to climate variables related to psychological safety, community building requires joint products and sharing of ideas and solutions. Activities such as brainstorming, panel discussions, roundrobins, symposia, and gallery tours of prior student work offer explicit opportunities for idea and solution sharing. Camaraderie and empathy can also occur with debates, case discussions, peer feedback, and structured controversy. An e-mail pal or critical friend might layer an important social experience in a class that is narrowly focused on certain preset cognitive goals. Shared histories and stories can happen at any online moment, though article or starter-wrapper discussions, voting or polling activities, and publishing of student work can quickly add to a community knowledge base. Rituals and regularly scheduled events might occur through weekly chats with guest experts or through weekly start-wrapper discussions.

Much remains to be studied regarding how to best create an online learning community. Advances in online pedagogy will help. As we find out more about the role of the instructor in online environments (Ahern, Peck, & Laycock, 1992; Weedman, 1999), the range of instructional strategies in these environments, and the components of effective online communities, online instruction will become better understood and more successful.

References

Ahern, T. C., Peck, K., & Laycock, M. (1992). The effects of teacher discourse in computer-mediated discussion. *Journal of Educational Computing Research*, *8*(3), 291-309.

Barab, S. A., & Duffy, T. (2000). From practice fields to communities of practice. In D. Jonassen, & S. M. Land. (Eds.), *Theoretical foundations of learning environments* (pp. 25-56). Mahwah, NJ: Lawrence Erlbaum Associates.

Bonk, C. J. (1998, April). *Pedagogical activities on the "Smartweb": Electronically mentoring undergraduate educational psychology students*. Paper presented at the American Educational Research Association annual convention, San Diego, CA. (see http://php.indiana.edu/~cjbonk/paper/smart_paper.html)

Bonk, C. J., & Cummings, J. A. (1998). A dozen recommendations for placing the student at the centre of web-based learning. *Educational Media International*, *35*(2), 82-89.

Bonk, C. J., & King, K. S. (Eds.), (1998). *Electronic collaborators: Learner-centered technologies for literacy, apprenticeship, and discourse*. Mahwah, NJ: Lawrence Erlbaum.

Bonk, C. J., & Reynolds, T. H. (1997). Learner-centered web instruction for higher-order thinking, teamwork, and apprenticeship. In B. H. Khan (Ed.). *Web-based instruction* (pp. 167-178). Englewood Cliffs, NJ: Educational Technology Publications.

Fulton, K., & Riel, M. (1999). Professional development through learning communities. *Edutopia*, *6*(2), 8-10.

Hara, N., Bonk, C. J., & Angeli, C., (2000). Content analyses of on-line discussion in an applied educational psychology course. *Instructional Science*, *28*(2), 115-152.

Kulp, R. (1999). *Effective collaboration in corporate distributed learning: Ten best practices for curriculum owners, developers and instructors*. Chicago: IBM Learning Services.

McMillan, D. W., & Chavis, D. M. (1986). Sense of community: A definition and theory. *Journal of Community Psychology*, *14*, 6-23.

Schwier, R.A. (1999). *Turning learning environments into learning communities: Expanding the notion of interaction in multimedia*. Proceedings of the World Conference on Educational Multimedia, Hypermedia and Telecommunications, Seattle, Washington: Association for the Advancement of Computers in Education, June 23.

Thiagi, S. (1998, March). *Thiagi GameLetter: Seriously fun activities for trainers, facilitators, and managers*, *1*(1), San Franscisco, CA: Jossey-Bass/Pfeiffer.

Weedman, J. (1999). Conversation and community: The potential of electronic conferences for creating intellectual proximity in distributed learning environments. *Journal of the American Society for Information Science*, *50* (10), 907-928.

Biographical Sketches

Dr. Curtis J. Bonk is a former CPA and corporate controller who received his master's and Ph.D. degrees from the University of Wisconsin. Curt Bonk is now an associate professor in the Departments of Counseling and Educational Psychology as well as Instructional Systems Technology at Indiana University (IU). He also is a core member of the Center for Research on Learning and Technology. He received the Burton Gorman teaching award in 1999 and the Wilbert Hites Mentoring Award in 2000. During the past few years, he has been a visiting scholar in Finland, Canada, and Australia. Curt is currently a Senior Consortium Research Fellow with the Army Research Institute. He recently edited "Electronic Collaborators: Learner-Centered Technologies for Literacy, Apprenticeship, and Discourse" published in 1998 by Erlbaum as well as the first online course reader for educational psychology published by Bell and Howell. Curt is currently working on a book on Web design and pedagogy. As a result of his continued attempts to marry pedagogical strategies to Web-based education and videoconferencing, he has been invited to present my ideas in numerous national and international talks and presentations. He is President of CourseShare.com, which he founded in 1999. He can be reached via e-mail at cjbonk@indiana.edu or cjbonk@courseshare.com.

Address: Indiana University
School of Education: Room 4022
Dept. of Counseling and Educational Psychology
Bloomington, IN 47405-1006
E-mail: CJBonk@indiana.edu or CJBonk@CourseShare.com
URL: http://php.indiana.edu/~cjbonk and http://CourseShare.com
Phone: (812) 856-8353

Vanessa Dennen is a Ph.D. candidate in Instructional Systems Technology at Indiana University and an assistant professor at San Diego State University. She teaches both traditional and distance education courses, with extensive use of Web-based conferencing in both formats. Her research interests include computer-mediated communication patterns, and the design of Web-based learning environments. Vanessa is the Director of the Radio-Television-Film Division of the National High School Institute at Northwestern University. She holds an MS in Educational Psychology from Indiana University and an MS in Instructional Design, Development and Evaluation from Syracuse University. She can be reached via the Internet at vdennen@indiana.edu and her personal homepage is located at http://php.indiana.edu/~vdennen. Vanessa has presented at many conferences during the past few years.

Address: Educational Technology
San Diego State University
5500 Camponile Dr.
San Diego, CA
E-mail: vdennen@indiana.edu
Homepage: http://php.indiana.edu/~vdennen
Phone: (716) 831-9796 (home)

Models and Methods for Evaluating Online Learning Networks

Charlotte N. "Lani" Gunawardena, Associate Professor
The University of New Mexico

Kayleigh Carabajal, Director, Institutional Effectiveness
Albuquerque Technical Vocational Institute

Constance A. Lowe, Teaching Associate
The University of New Mexico

Jean Wood, Distance Education Developer
The University of Edinburgh

Introduction

The development of appropriate methodologies for evaluating the myriad, ever-changing forms of online learning presents a critical challenge to distance educators. The open-ended nature of online learning projects, the multiple threads of conversation, and fluid participation patterns call for new ways of looking at evaluation. The purpose of this workshop is to address this challenge and discuss models and methods that facilitate the evaluation of online learning networks. During the workshop participants will:

- analyze a systems-based model for conceptualizing online evaluation;
- identify questions and methods for conducting formative evaluation including cost effectiveness of their own online courses;
- examine evaluation questions, models, and methods for conducting summative evaluation of online courses; and
- develop an evaluation plan for a specific context.

The Systems Component Contexture Model

We will begin this workshop by presenting a model that can be used to conceptualize evaluation of online learning networks. Based on a systems view of evaluation, the model will show the importance of covering all component processes that make-up an online learning environment - including teaching, learning, communication, design, management and institutional mission. Few studies document these components or their relationship to the effectiveness of the overall program of which they are a part. Our model incorporates the components of the system; the institutional context, and the instructional experience, within a resiliency framework. The function of evaluation is to systematically monitor the pressure pulls of each component and the effect on the learner.

The systems evaluation model (a graphic will be distributed during the workshop) consists of the examination of the level of influence of four components at three levels. The first level is institutional experience, which encompasses the educational philosophy, mission, resources, and management of the institution within which the distance learning program is housed. The next level incorporates all aspects of the mediated curriculum including the epistemology of the instructors, the course design team, the knowledge resources, the choice of media, and the activities designed in support of the learning events. The final level is the learner level which includes, learner characteristics, life situation, prerequisite skills, attitudes and goal orientation. The four components of the model are: Content, Context, Collaboration, and Control.

The content component is concerned with the topic area of the course or program being evaluated. Evaluation at this level concerns: the place of this course or program within the institutional mission and the relationship of the program to the achievement of the institutional goals. From the instructional level, the questions center on course structure, instructional design, instructional goals, objectives, and anticipated outcomes relative to this specific subject matter, as well as sources of knowledge and available resources. On the learner level, evaluators address prerequisite skills, attitudinal factors specific to content, and goal orientation.

The context component examines situational, environmental factors. At the institutional level, evaluation questions address the management of the institution, cost-benefit analysis, support of the delivery technology, support for student, staff, and faculty needs, faculty-student ratios, and the ability for increased capacity (i.e., the degree of flexibility for program expansion). Second level questions look at professional development for staff and faculty, faculty experience with technology, and the choices of technology available. From the learner level, such things as learner support, and technology training are considered.

The collaboration component includes intra-institutional collaboration as well as inter-institutional collaboration, including external alliances with like institutions and support for cross-departmental course design teams. These factors largely impact instructor-student interaction and student-student interaction at the learning event level. The pressure pulls in this component are straightforward as evaluators address situational opportunities provided for group processes resulting in the social negotiation of meaning.

The final component deals with issues surrounding learner control. The focus of the evaluation of this component is on learning and the assessment of learning. At an institutional level, factors will include the assessment philosophy, indicators for student achievement and success, entry and exit and external accreditation requirements. At the instructor level, evaluation questions will be asked based upon instructor epistemology, learning theory perspective, and choice of instructional design and media. At the level of the learning event, learner control, and level of learning will be addressed.

The function of a systems-component contexture evaluation is to systematically monitor the pressure pulls of each component and the relationship each level of each component has upon the learner. The use of this holistic model provides a framework from which to determine those questions left unasked as well as the opportunity to draft new questions for the future. Evaluation will be conceived of at both the macro and micro levels. At the macro level, the conceptual model presented will help participants understand the components that need to be addressed in an evaluation system. We will address how the underlying epistemology reflects evaluation questions and methods. At the micro level, we will discuss questions and methods for conducting both formative and summative evaluations.

Formative Evaluation

Formative evaluation will focus on the ongoing process of a computer conference. This will include a variety of methods such as: simple tallies of such parameters as participation rates, and the percentages of conference contributions that were devoted to "on task" discussion, seeking technical help, socialising, and "causing trouble." At the same time as we are keeping an eye on these general measures of collective output, we need to be alert to individual needs: we need to identify and encourage the team-builders, we need to recognize and respond to the "isolates." In real classrooms this "reckoning" and this orchestration of individual and collective endeavor is done "on the run." Few online practitioners have yet made explicit how they achieve this in online networks. We suggest the necessary information may be easily collected on electronic data sheets whilst the class is in progress. If we then set these tallies against time spent in preparation, in teaching, and on administration, they can be aggregated in a number of ways, and presented in graphical forms as cost analysis data.

Summative Evaluation Questions, Models, and Methods

In discussing summative evaluation, we will critically reflect upon the questions we have asked and the models and methods we have employed to evaluate online learning in several studies we have conducted. The questions, models and methods are described below.

How Can We Describe Online Participation, Interaction Patterns, and Group Dynamics?
In relation to this question, we will critically analyze the model developed by Levin, Kim and Riel (1990) for analyzing instructional interactions on electronic message networks. This model has four dimensions of analysis: (a) Participant Structures Analysis, (b) Intermessage Reference Analysis, (c) Message Act Analysis, and (d) Message Flow analysis. We will critique the application of this model to evaluate a peer support network for medical students (Gunawardena, Gittinger, & Dvorak, 1991). Sudweeks and Simoff (1999) discuss a similar multi-method approach called "Neural Network Analysis." This appears to be an extension of Levin, Kim and Riel's Intermessage Reference Analysis with an added feature that incorporates numerical values to the strength of interrelationships between messages to produce a dynamic model rather than a map. The position of each message in time also forms part of its description in this system, although in our experience the timing of messages in any asynchronous forum tends to reflect the demands on participants' time in their lives and work rather than the degree of participants' interest in the conference. Levin, Kim and Riel use Message Flow Analysis to obtain a somewhat broader view of the growth and decline of interest in a conference; this seems to us somewhat more realistic. While Sudweeks and Simoff thus present a quantitative method of content analysis, they also present a qualitative method of analyzing the "dimensions" of a conference. The dimensions they identify overlap to some degree with the message functions identified by Henri (1992) discussed later. It would be interesting to compare the use of the two systems on a single data set.

Were Learners Satisfied With Their Online Learning Experiences? We will discuss two studies (Gunawardena & Zittle, 1997; Gunawardena & Duphorne, in press), that used survey data and regression models to answer the question: What are the variables that can predict learner satisfaction in online learning networks? Both studies were based on survey data from the inter-university "GlobalEd" computer conference that provided a forum for graduate students in distance education to share and discuss research, and experience distance education by using CMC. Gunawardena and Zittle (1997) used eight process variables to predict overall student satisfaction with the Globaled conference. Gunawardena and Duphorne (in press) explored predictors of learner satisfaction in a computer conference basing their analysis on the Adult Distance Study Through Computer Conferencing (ADSCC) model developed by Eastmond (1994). In this model, Eastmond identified three major aspects which sequentially influence the student's study experience: (a) readiness—the personal and environmental factors that prepare the student for study in this instructional situation; (b) online features—the unique elements that make up the computer conferencing environment; and (c) learning approaches—the general and specific learning strategies a student uses to make the conference an effective learning experience. Gunawardena and Duphorne tested the predictive power of the Eastmond ADSCC model by examining which of the three independent variables: learner readiness; online features; and CMC-related learning approaches, could best predict the dependent variable, learner satisfaction with an academic computer conference.

Did participants learn? How did the individual learner make sense of the computer conference? What did he or she learn? These questions are more difficult to answer if we subscribe to a constructivist view of learning where the individual learner is expected to take away a unique perspective from the learning experience. Traditional methods of measuring learning using pre and post tests will not work well in this context as learning occurs in many different forms. We have examined questions related to learning from two perspectives: What did participants learn about the subject/topic/content that was discussed? and What did they learn about the medium of computer conferencing and it's influence on the learning process? We will discuss several methods we have used to answer these questions

Was Knowledge Constructed? Perhaps the most challenging and the most exciting question one can ask in evaluating online learning is: Was knowledge constructed within the group by means of the exchanges among participants? We will discuss two interaction analysis models we have used to answer this question. Initially, we began to use Henri's (1992) model to analyze the transcripts of a global online debate we had conducted as an adult professional development experience. However, it became clear that three aspects of Henri's model; its basis in a teacher-centered instructional paradigm, its distinction between the cognitive and the metacognitive dimensions, and its treatment of the concept of interaction, were unsuited for application to the debate. We felt that we needed to develop a new definition of interaction for the CMC context if we are to examine the process of social negotiation (Gunawardena, Lowe, & Anderson, 1997).

We believe that the metaphor of a patchwork quilt better describes the process of shared construction of knowledge that occurs in a constructivist learning environment. A quilt block is built up by the application, one after another, of small pieces of cloth, which when assembled form a bright and colorful pattern. The pieces, according to this analogy, are the contributions of individual participants. Each participant contributes to the whole his or her own texture and color of thought, just as every scrap of fabric forms a distinctive element in the overall pattern. The pattern may not be complete during a single conference, but individual responses can contribute toward the formation of a pattern. The process by which the contributions are fitted together is interaction, broadly understood, and the pattern which emerges at the end, when the entire gestalt of accumulated interaction is viewed, is the newly-created knowledge or meaning. Interaction is the essential process of putting together the pieces in the co-creation of knowledge.

Based on this new definition of interaction, and grounded theory principles, we developed an outline of the process of negotiation which appears to occur in the co-construction of knowledge. The outline led to the development of the interaction analysis model which has five phases, reflecting the complete process of negotiation which must occur when there are substantial areas of inconsistency or disagreement to be resolved. The phases of learning outlined in this model occur at both the individual and social level and can be described as: Phase I: Sharing/Comparing; Phase II: Dissonance; Phase III: Negotiation/Co-construction; Phase IV: Testing Tentative Constructions; and Phase V: Statement/Application of Newly-Constructed Knowledge. A detailed discussion of these phases and operations at each phase, as well as the underlying theoretical framework and application of the model is found in Gunawardena, Lowe, and Anderson (1997).

We will discuss these summative evaluation models in detail and critique their application to the evaluation of online learning.

Conclusion

We believe that the adoption of a single technique for analyzing the quality of online learning experiences has not yielded satisfactory answers. The complex nature of online learning calls for the use of multiple methods and multiple sources of data to understand group as well as individual learning. The Internet is an ever-changing phenomenon, so, the use of just one method provides only one perspective at one point in time. We advocate the use of multiple approaches in studying computer conferencing, in order to obtain a wider picture of this dynamic learning environment.

During the workshop, participants will engage in hands on experiences analyzing the models and methods discussed and applying them to their own context. They will be given analytical tools, templates and checklists which will enable them to work speedily through their assignments. By the end of the workshop, they will have developed and presented formative and summative evaluations of selected online classes.

References

Eastmond, D.V. (1994). Adult distance study through computer conferencing. *Distance Education, 15*(1), 128-152.

Gunawardena, C. N., & Duphorne, P. (in press). Predictors of learner satisfaction in an academic computer conference. *Distance Education*.

Gunawardena, C. N., Gittinger Jr., J. D., & Dvorak, L. P. (1991). The design, implementation and evaluation of a computer-mediated communication support system for medical students. *Proceedings of the Seventh Annual Conference on Distance Teaching and Learning* (pp. 98-102). Madison: University of Wisconsin-Madison.

Gunawardena, C. N., Lowe, C. A., & Anderson, T. (1997). Analysis of a global online debate and the development of an interaction analysis model for examining social construction of knowledge in computer conferencing. *Journal of Educational Computing Research, 17*(4), 395-429.

Gunawardena, C. N., & Zittle, F. (1997). Social presence as a predictor of satisfaction within a computer mediated conferencing environment. *American Journal of Distance Education, 11*(3), 8-25.

Henri, F. (1992). Computer conferencing and content analysis. In A. R. Kaye (Ed.), *Collaborative learning through computer conferencing: The Najaden papers* (pp. 117-136). Berlin, New York: Springer-Verlag.

Levin, J. A., Kim, H., & Riel, M. M. (1990). Analyzing instructional interactions on electronic message networks. In L. Harasim (Ed.), *Online education* (185-213). New York: Praeger.

Sudweeks, F., & Simoff, S. J. (1999). Complementary explorative data analysis. In S. Jones (Ed.), *Doing Internet research: Critical issues and methods for examining the net* (pp. 29-55). Thousand Oaks, CA: Sage.

Biographical Sketches

Charlotte N. "Lani" Gunawardena is associate professor of distance education and instructional technology, Organizational Learning and Instructional Technology Program, College of Education, University of New Mexico. She developed the graduate program in distance education at UNM. For the past decade, she has been conducting research on distance education, and has over 50 publications and national and international presentations to her credit.

Address: Organizational Learning & Instructional Technologies Program
College of Education
University of New Mexico
Albuquerque, NM 87131.
E-mail: lani@unm.edu
URL: <www.unm.edu/~olit/lani>
Phone: (505) 277-5046
Fax: (505) 277-5553

Kaleigh Carabajal is Director, Center of Institutional Effectiveness, Albuquerque Technical and Vocational Institute. She established the Faculty Development Center at TVI and developed the first credit bearing distance education course. She is a doctoral student in distance education at the University of New Mexico, and has presented at numerous conferences and workshops.

Address: Albuquerque Technical Vocational Institute
525 Buena Vista SE
Albuquerque, NM 87106.
E-mail: <kcarabajal@TVI.cc.nm.us>
Phone: (505) 224-3457

Constance A. Lowe is a doctoral candidate and Teaching Associate at the University of New Mexico. She has over 15 years of experience in adult education, first as a safety training and evaluation specialist with the Federal Mine Safety and Health Administration and most recently as a Staff Development Specialist with the New Mexico Department of Health. She has presented at numerous conferences including ICDE 1997, Madison 1998, and SITE2000.

Address:
E-mail: <conilowe@unm.edu>
Phone: (505) 954-4505

Jean Wood is the first and only Distance Education Developer at the University of Edinburgh in Scotland (since 1997). She has over eight years experience as a tenured lecturer in educational development at Monash University in Australia (1989-1997), eight years experience as a lecturer in further education in the UK (1971-1979) and over five years experience as a trainer, a training consultant, and a training manager in industry in the UK, Europe, US and Australia (1980-1985 and 1988-1989). She has organized and led workshops on distance and online education at a number of universities in Scotland, in other countries in the UK, and in Australia, since 1990.

Address: University of Edinburgh
Paterson's Land
Holyrood Road
Edinburgh EH8 8AQ, Scotland
E-mail: <jean.wood@ed.ac.uk>
Phone: +44 -131 - 651 - 6544
Fax: +44 -131 - 651 - 6664

How to Organize and Implement Effective Faculty Development for Online Instruction

Mary Ann Koloff, Assistant Professor
Eastern Kentucky University

Ron Yoder, University Web Administrator
Eastern Kentucky University

You want it. Whether it's called online learning, distance education, networked education, distributed learning, or connected learning, you know that you want your students and institution to have access to online learning. But you also want to do it right. Online and web-connected courses need to be fiscally feasible, and faculty need to buy in. In the following, we offer a model on how to implement and sustain faculty development for online learning. The discussion is flavored by the continuing story of the implementation of online learning at Eastern Kentucky University, a public regional university with a significant number of "non-traditional" students.

To better understand the context and basis of our discussion on

1. How to achieve a timely implementation of connected learning
2. Recommendations for supporting faculty transitioning to connected teaching
3. How to establish and sustain connected education opportunities

you may want to scan the following terms, assumptions, and preliminary questions.

Some Terms

Anytime, Anywhere

A key characteristic of connected learning. So you neglected to give your students a critical piece of information without which their homework problem is impossible to solve. You don't have to wait until the next class period—you simply put an announcement in the class online area or even email the entire class. Or a student forgot what the assignment was—all s/he needs to do is get online to find the relevant information.

Anytime, Anywhere, Any way

A corollary to "Anytime, Anywhere." This is also known as "Content Rules." Connected learning teachers and learners don't focus so much on the technologies that allow them to be connected as they do on the question "Have the technologies facilitated learning?"

Bb

Short for "Blackboard." Notice that, as of version 5, Blackboard CourseInfo is now simply called "Blackboard 5."

Connected Learning

Part or all of a student's "classroom" experience occurs physically apart from the traditional classroom, classmates, and instructor(s). A student may or may not be in a remote location; they may simply be getting online from the their dorm computer. Synonyms for connected learning include distance learning, networked learning, distance learning.

Email, Discussion Board, Chat

These are popular online text-based ways to communicate ("connect") with others on the Internet. Email and Discussion boards are "anytime, anywhere," while chat sessions require their participants to be online at the same time.

Emoticon and Avatars

Emoticons are the popular sideways faces used to show emotion in text communication such as in emails, discussion boards, and chat rooms: :^) ;^> :^P (smile, wink, hard at work faces). Avatars are animated graphic characters that are sometimes used to represent the participants in a chat session.

IT

Short for Information Technology.

WebCT

WebCT stands for "Web Course Tools." WebCT and Bb are the two online course delivery systems that EKU considered most seriously when looking for the successor to its "Web Course in a Box" system during the fall 1999 semester.

Some Assumptions

1. Many "Online Learning Companies" are competing for your dollars. The dust is settling a little bit, but it is clear that it is still easy to make poor choices.
2. People are generous when it comes to giving advice(!).
3. Read all about the Web's free-advice revolution in Wired magazine's July 2000 issue, or sample the advice directly at http://www.askme.com, http://www.epinions.com, or http://www.Experts-Exchange.com.
4. A viable online learning implementation needs to be scalable and integrate cleanly with other information technology investments at your institution such as PeopleSoft or SCT Banner.
5. A scalable online learning delivery system needs to run on a real database, not just flat text files.
6. The true cost of implementing online software is much more than the initial decision and purchase.

7. It includes the time and money investments in upgrades, maintenance patches, training, and getting faculty and staff buy-in.
8. There are usually some individual staff members that will work beyond the call of duty to find and implement the "right" technologies and directions at your institution. (Find them!)
9. Connected learning requires a "digital plant" infrastucture complete with
   - Personal communications tools and applications
   - Internet &amp; Intranet services
   - Dedicated servers and software
   - Software and services from external providers (Boettcher, 2000)
10. People are needed to maintain the connected learning infrastructure(!)
11. After all the hype, the Web is still a primarily low-bandwidth, mostly text-based medium.

Some Questions

What kinds of students are you trying to serve with connected learning (traditional, full-time workers, employed/unemployed)?

1. How are the above students currently served?
2. What are the connected learning infrastructure setup and ongoing costs (hardware, software, network services, people)?
3. What computers and software do learners have and will these be compatible with anticipated connected learning technologies? (Ely, 2000)

How to Implement Connected Learning in a Timely Manner

Infrastructure (Have one!)

Aside from having in place the necessary connected learning infrastructure (assumption 7), and the people to support it (assumption 8), universities and colleges need to be flexible and agile to respond to the rapid changes in the online industry. Work in "committee time", and your solutions will not only be costly, but probably irrelevant. There needs to be a balance between committees and the designated individual decision makers who can act quickly (See assumption 6).

Various University support systems need to be not only aware of each others' endeavors, but actively work together. Some areas to start with are Information Technology, Media Resources, Libraries, and the Teaching &amp; Learning Center. At EKU, one of the neat side-effects of various search committee events and department-independent institutes and workshops, is that faculty and staff learn what is happening throughout the entire University. Results include streamlined efforts, collaborative courses, and better participation.

Select Appropriate Authoring Packages and Platforms

Start with requirements given by faculty and support staff. Then make sure the user interface is intuitive. Easy to use applications requiring little initial instruction will catch on the quickest and with the most people. It is possible (and okay) to have various authoring applications on campus. The key is to make it clear which ones the staff will be supporting. It is good to make clear the implications and effects of using "non-supported" applications; e.g., "If you use Netscape Composer to edit your web pages, don't be surprised when it alters your hand-coded HTML."

Why EKU Chose Blackboard

In a nutshell, because Bb has:

1. The most cost effective entry solution. (no "per-user" fee structure).
2. Of the two most popular online environments (WebCT, Bb), Bb runs directly off a true database instead of flat text files.
3. Momentum. Bb has it and is gaining more. See:
    - America Online (AOL) online learning services based on Bb
    - Pearson Education, AOL, Dell investment in Bb
    - Web Course in a Box Acquisition
4. Scalability. We can move to higher levels of Bb integration with SCT Banner, our University's "all purpose" administrative computing package.
5. Less moving parts. When we do integrate Bb directly with Banner, we will be dealing with just two companies (Bb & Banner). If we had gone with Banner, Campus Pipeline, and WebCT, we would be juggling three companies. By having less moving parts (software to upgrade, patches), it will be easier to keep our academic and administrative online services working together.
6. More options & customizability. By using Bb as our portal (level II and higher) we have more control over advertising and the appearance of our Web portal. With Campus Pipeline we would have to pay a large amount of money to not advertise, and we would not be able to modify the portal's appearance nearly as much.
7. Capacity for keeping alumni in touch. Our experience so far is that not only do faculty enjoy the Bb interface, but so do students. Long after students have graduated, EKU can for little cost (space on the server, no administrative cost—they're already on the system!) continue to give alumni web-based email aggregation, addressbooks, personal calendars, and personalized news services. Furthermore, with Bb, we can target alumni with special messages such as fund-drive and alumni reunion announcements.
8. Early and significant participation with the IMS Global Learning Consortium. Bb is making its online course delivery tools follow the open IMS distributed learning environment specifications. This makes importing and exporting content easier and allows multiple authors to work together.

Recommendations for Supporting Faculty Making the Transition to Connected Teaching

Successful transitions from traditional course design to online offerings must be prefaced by a supportive environment. Support from top level institution administration is essential. While early adopters may not require as much support, subsequent participants (the "pragmatists") completing the transition to online need the benefit of well-placed incentives. To be successful, these pragmatists must be assured of on-going support throughout the transition process.

At EKU, we designed and delivered a two week Online Teaching Institute (May 22 - June 2, 2000). The purpose of the institute was to provide a safe and guided time when mainstream faculty could receive immediate Bb support and develop a community with each other and the early adopters that had been using Blackboard at EKU during the Spring 2000 semester. Instead of requiring faculty scholarships to pay for the institute, as had been the case in the past, this time, not only was the institute free, but participants were each given accounts to pay for professional development and online materials and tools. These accounts were funded by the new EKU Teaching &amp; Learning Center. We believe the institute was a success. Over 50 online or web-enhanced courses were created and all were demonstrated on the last day of the institute.

Institute sessions covered items as basic as file management, general guidelines for organizing and developing online courses, and how to use the online course delivery system. Time was also spent introducing various web media authoring tools such as Photoshop and Flash. Topics included how to design an effective online syllabus, placing objectives in the software, architecting an online course area, and how to use the online assessment and gradebook tools. Other institute events included presentations by various divisions of the university demonstrating their services for contributing to online teaching. For example, Media Resources demonstrated the how to's of acquiring video and streaming media for online courses. The Library demonstrated accessing databases for journal articles. The University lawyer addressed copyright issues in the use of existing materials and ownership of intellectual property.

An important feature of the institute was that it provided enough time for the participants to get at least one of their courses completely online or web-enhanced before it was over. The two-week span allowed the three main institute facilitators to provide participant-inspired special interest sessions that covered a wide range of sophistication. Participants had the opportunity to spend extra time learning how to use the assessment tools, how to convert PowerPoint presentations to lightweight Flash Web presentations, and view Photoshop training videos. Towards the end of the institute, some enterprising participants even set up half-hour blocks to program one-on-one consulting with the three institute facilitators. On the last day of the institute, faculty shared the courses they had designed or converted to online with one another. This provided both accountability and the opportunity to share ideas.

Critical Factors for Teaching Online

Prior to organizing course content into effectively designed instruction, the instructor should articulate his or her teaching and learning philosophy in writing or explain it to a colleague. This is crucial since, in the online world, information does not flow from the instructor to learner in the traditional sequential, linear, and lecture pathway in the classroom. If a professor adheres to this traditional style of teaching, the learners may not consider the course as effective. Translating teaching from a traditional to a web-based course means thinking of ways to make the online learning experience a more active environment for the learner. Online courses can provide opportunities and resources for learners to build and modify their own knowledge. The design of a course must encourage learners to examine their ideas and beliefs, recognize gaps in their learning, reorganize knowledge, and shift attitudes so that learners internalize knowledge and gain long-term understanding of the content.

Online faculty need to learn more than the mechanics of using instructional media development tools. Merely putting class lectures, notes, and reviews on the web is not enough. Rather, a high level of interactivity is key. However, there are barriers to interaction. For instance, instructor and student body language is difficult to read. On the Web, body language is limited to emoticons, avatars, and the participants' ability to express themselves in writing. Even with two-way interactive television, body language is often hard to read or is reduced to reading facial expressions when the camera has a close-up shot. It is clear that the design of the course and not its facilitating technologies must be central to faculty development efforts.

Considering the need for interaction in the course content, the instructional design for the course should include different types of activities. A learner must interact with course resources. Examples of resources include textbooks, videos, audio files or tapes, or web links. This interaction with the resources occurs outside of formal classroom time. The critical element in this aspect is for the learner to come to either the traditional or online class prepared to discuss the information, perceptions or opinions expressed in the resources. Secondly, interaction between individual or groups of learners through online exchanges must occur so that new concepts or modified knowledge can be discussed and shared. Interaction in this regards also allows for social interaction to occur as it often does in a face-to-face situation. Finally, interactions with the instructor or other experts must occur. This interaction is often classified as "class time." The instructor must reexamine the purpose of "class time." Some critical activities during the formal "class time" include the instructor negotiating the meaning of the course textual materials, readings, or course assignments. Since the web is basically text oriented, learners seek clarification of the meaning of the textual information. Additional teaching activities for class time may include conversations with experts in the field. This interaction can be designed by combining appropriate technology tools and interactive techniques such as role playing, debating, simulating, gaming, demonstrating, and group discussion.

Another issue concerns the transition of the course objectives and content from the traditional face-to-face offering to online. Some course content may not be appropriate for online. The content must be thought of in association with the potential technology tools. For instance, course content that is heavily dependent upon demonstrations by the instructor or learners may not be appropriate for an online course. The course may provide diagrams and illustrations, but particular demonstrations would be dependent upon face-to-face interaction. For example, essential aspects of a speech course include the placement of the tongue in order to make particular sounds. Here, the instructor needs to demonstrate the placement of the tongue, and gain feedback from the learners as they practice tongue placement for particular speech sounds. This particular aspect of the course may be better handled in a face-to-face situation.

In addition to the content issues, the social aspects of the course need to be considered. The objectives should not only reflect the knowledge or academic nature of the course, but also the social network needed by learners to construct or modify knowledge, attitudes, or skills. The resulting course design must correlate with the interactive strategies and the technology tools.

One example of combining objectives and content, technology tools, and interactive techniques occurred in an adolescent literature course. One objective of the course was to have learners effectively react to adults wanting to censor particular library books. In order for the learners to respond in an appropriate manner, they must be able to argue from the position of the censors. Thus the interactive technique used in the online environment was to engage in a debate. The technology tools used for the interactive strategy included placing learners in small, private chat groups so they could prepare for their side of the debate. The online "class session" involved the two groups debating the issue of banning particular books from the school library. The discussion forums and chats allowed for small group cooperative learning while the whole group debate allowed the learners to reformulate their preconceived notions concerning the banning of books. The result was an effective student directed and controlled online event.

How to Establish and Sustain Connected Education Opportunities

Establishing and sustaining effective faculty development opportunities for experienced and novice online teachers is the challenge for many universities. The new Teaching and Learning Center on the Eastern Kentucky University campus provided the incentives for faculty attending the two-week institute. Further activities planned by the Teaching and Learning Center include follow-up workshops for particular software such as Dreamweaver, Photoshop, Flash, and Access during the academic year. The Center will also host Brown Bag lunches so faculty may converse about successful strategies for teaching online. In addition, faculty will be able to request one-on-one consultation with an instructional designer and/or an instructional technologist.

Post-institute suggestions from the faculty attendees included developing "university technology fellows." The idea is to identify and give recognition to those faculty members who have been successful in online courseware development and pedagogy. Furthermore, the "university technology fellows" would continue to work with the instructional designer and instructional technologist to further enhance their instructional design and technological skills. The intention is to promote faculty working with faculty and develop a community of learners and leaders for online teaching.

Besides the above activities to establish and sustain faculty development for online teaching, it is expected that some faculty will prefer other means of developing their skills. Alternative strategies include the delivery of modules through a web site allowing faculty members to remain at their desks. Such modules would center on how to choose and use particular technology tools and pedagogy. Another strategy is to have an online faculty development course allowing for extended modules dealing with online course authoring and instructing. These "just-in-time" methods allow for individual choice, self-pacing and practice in needed areas.

Summary

Online learning environments move at the speed of the Internet. To be timely, universities need to flexible and agile. Different areas in a university need to work as a team to provide effective faculty development and support for online endeavors. Faculty Development needs go beyond the mechanics of the online tools to include effective pedagogies. While online development can occur through the usual workshops, brown bag lunches, and one-on-one consulting, websites and online courses can offer an anytime, anywhere dimension to providing faculty and staff development. The connected learning infrastructure, from the equipment, software, and outsourced services to the University's own support staff, needs to be clearly integrated.

References

Boettcher, J. V., & Conrad, R. (1999). *Faculty guide for moving teaching and learning to the Web*. Mission Viejo, CA: League for Innovation. Available: www.league.org

Boettcher, J. V., & Kumar, M. S. V. (2000, June). The other infrastructure: Distance education's digital plant. *Syllabus, 13*(10), 14-22.

Buchanan, E. A., (2000, May). Going the extra mile: Serving distance education students with resources and services. *Syllabus, 13*(9), 44-47.

Donovan, M., & Macklin, S. (1999). The catalyst project: supporting faculty uses of the webwith the Web. *Cause/Effect, 22*(3), 18-25.

Ellis, T. J. (1999). Translating a college course for delivery over the World Wide Web. *Journal of Instructional Delivery Systems, 13*(3), 14-17.

Ely, D. (2000, June). Looking before we leap: "Prior questions" for distance education planners. *Syllabus, 13*(10), 26-28.

Everhart, R. L. (2000, May). Enterprise systems and distance learning: Creating services for connected learners. *Syllabus, 13*(9), 48-51.

Graves, W. H. (2000, June). The dot.xxx challenge to higher education. *Syllabus, 13*(10), 30-36.

Green, K. C. (1999). *Campus computing 1999*. Encino, CA: The Campus Computing Project.

IMS Global Learning Constorium, Inc. Available: www.imsproject.org.

Lambert, M. P. (2000, June). Context versus Content: A fresh look at the ongoing debate over place-based vs. distance education. *Syllabus, 13*(10), 24.

472

National Center for Educational Statistics, U.S. Department of Education. (1999). Available: http://nces.ed.gov

Online Teaching Institue. (2000). Eastern Kentucky University. Available: http://webteach.eku.edu

Parker, A. (1999, Autumn/Winter). Interaction in distance education: The critical conversation. *Educational Technology Review, 12*, 13-17.

Phillips, R., & Merisotis, J. (1999). *What's the difference? A review of contemporary research on the effectiveness of distance learning in higher education*. Washington, DC: The Institute for Higher Education Policy.

Polichar V. E., & Bagwell, C. (2000, May). Pedagogical principles of learning in the online environment. *Syllabus, 13*(9), 52-56.

Biographical Sketches

Dr. Mary Ann Kolloff is an assistant professor in the Department of Curriculum and Instruction at Eastern Kentucky University (EKU). Her responsibilities include teaching technology and literature classes for library science graduate students. She teaches using two-way interactive video and web-based instruction. She received her Ed.D. in Instructional Systems Technology from Indiana University; Ed.S. in Instructional Systems Technology from Indiana University; M.Ed. in Special Education from National-Lewis University; and B.S. in Child Development and Family Life from Northern Illinois University.

Address: Department of Curriculum and Instruction
521 Lancaster Ave.
Eastern Kentucky University
Richmond, KY 40475
E-mail: mary.ann.kolloff@eku.edu
URL: www.curriculum.eku.edu/faculty/kolloff
Phone: (859) 622-8086
Fax: (859) 622-2004

Ron Yoder is the web site administrator at Eastern Kentucky University. His responsibilities include designing and developing the EKU Web, administering and customizing EKU Web applications, providing faculty development on web content and online courses, and evaluating and recommending web technologies for EKU. He received his M.A. in Mathematics from University of South Florida and his B.A. in Mathematics and Physics from Goshen College.

Address: Information Technology and Delivery Services
521 Lancaster Ave.
Eastern Kentucky University
Richmond, KY 40475

E-mail: ron.yoder@eku.edu
URL: www.itds.eku.edu/staff/yoder
Phone: (859) 622-6213
Fax: (859) 622-2266

Creating Alternative Student Assessments for Distant Learning Environments

Lynne M. Pachnowski, Ph.D.
Associate Professor, Education and
Coordinator, Distance Education
University of Akron

Steve Mitchell, M.A.
University of Akron

Establishing a Need

In this era of technical distance learning development and implementation, instructors in colleges and corporations increasingly may find themselves interested or even pressured into teaching in these alternative environments. Very often, these instructors may feel comfortable or easily obtain resources for transferring their content to alternative environments or for adapting their methodology. However, how often do they receive assistance in adapting their student evaluation techniques to the distance environment?

At our university, we began collecting data from our distance learning faculty on their satisfaction and needs at the end of Spring 1999. That data revealed that the faculty found evaluating their students fairly difficult. In fact, of all six items regarding the faculty's impressions of the teaching/learning process, the student evaluation item was the only one that received a "more difficult" ranking.

Last year, university administrators determined that all new, asynchronous courses at the university must go through a curriculum approval process. One of the criteria of approval is whether the faculty member who developed the course has chosen appropriate evaluation methodology. Therefore, for ethical reasons and for the continued well-being of our faculty, we found a need to develop an evaluation handbook. The handbook will be distributed to all new (and existing) distance learning instructors teaching in both synchronous and asynchronous environments.

Theory and Assumptions

Initially, university professors who specialize in evaluation were asked for their consultation in the project. Their advice was short and simple: One's choice of a student evaluation technique should depend on one's course or lesson objective. In other words, as an instructor, what a student produces for me to evaluate depends entirely on what it is that I plan for him to learn before the lesson begins. For example, if my objective (that is, what I want students to do) is to recognize and translate fifty newly-discussed French terms, then I will determine if my students have learned these by listing the fifty terms on a sheet of paper and then giving the sheet to the students with directions to write the translations next to each term. Traditionally, this has typically been the method that most foreign language instructors use to test basic vocabulary skills. If asked why, they would probably respond that it is an efficient way to evaluate this knowledge and because it is the manner in which they were evaluated as students, themselves. However, when the course is moved into the distance education environment, the instructor may be in a situation where he cannot see his students (in a synchronous environment) or where the students are on-line. This may mean that there is suspicion that the students are consulting their notes during the assessment.

The example above can be modified for the distance environment by using current hardware or software, by using secured testing sites, or by having the instructor slightly modify his expectations. But the challenge that university distance education administrators face is that many college instructors without knowledge about instructional design may not try to think creatively when planning instruction. Many just mimic the instructors they had without asking themselves if there are other alternatives. Can universities help to facilitate the conversation between the faculty members and the information services personnel in order that the necessary, creative problem solving takes place? We are anticipating and planning that our faculty, after receiving the handbook, will subsequently take part in a conversation with the appropriate technical support that can fill in hardware and software solutions once the faculty can communicate his needs.

The Content of the Faculty Evaluation Handbook

We began the handbook with a simply introduction regarding the goals of the handbook and a list of definitions of key terms that will be used throughout the guide (such as synchronous and asynchronous communication, learner outcomes, rubric, etc.).

The next part of the handbook is meant to be interactive and to encourage the faculty member to literally write their answers onto the page. The handbook asks the faculty member to list the knowledge, skills, or values that he wants his students to learn. These are the objectives of the course and should be written as specifically as possible. To help the faculty member do this, the handbook contains a list of good action verbs to use for the objectives. For instance, good knowledge objectives may contain the verbs, "to identify" or "to rank." Good value or attitude objectives may contain the verbs, "to accept" or "to defend."

Once the faculty member fills these in, the next step is to take each objective and to answer for each, "How can your students demonstrate to you that they are able to do this?" (This is the learner outcome.) The initial responses will typically be those answers that we would expect to see in a face-to-face classroom. Therefore, the faculty member is encouraged next to each response to write what conditions, resources, or restrictions are implied in this learner outcome. The faculty member is also encouraged to write two to three learner outcomes for each objective, therefore forcing the instructor to consider whether there are other methods for measuring the same objective.

For instance, in the example in the last section, the faculty member's objective would be, "To translate fifty newly-discussed French terms," then the learner outcome may be to have students write the English translation to the French term on a sheet of paper. However, if the students are on-line, then there is suspicion that they will consult their notes during the on-line test and not memorizing them. Therefore, one alternative would be to have the students report to a proctored site in order to take the test. If the instruction is taking place in a synchronous, video-conference-based environment, then a solution may be to have the students take the test and then to seal them in envelopes all while on camera so as to ensure that the tests are being taken without assistance to the ensure that they are not able to be tampered with after the allotted time is complete.

Faculty members are then encouraged to try whenever possible to make their assessment authentic. There is a great deal of discussion in the world of education as to what constitutes an authentic assessment. However, for our discussion, an assessment measure is authentic when the instructor creates a learning experience and learner outcome that very closely replicates an activity that successful students would face in the real world once the course is over. For instance, in the example regarding the French terms, an authentic-type of assessment that would measure that objective would be to have the students write sentences or paragraphs using the French terms. Of course, this may require composition skills that the students may not have yet. But if they do, then this assessment eliminates the instructor's concern for test security and has the student engage in an activity that can be applied outside of the course.

Just as the faculty member might be feeling dismayed that assessments possibilities are limited in distance teaching, the handbook reminds the faculty member that the technology may enable them to create experiences that they may not have been able to before because of their students' easy access to the Internet. For instance, one instructor at our university created a learner experience in which they were to read about two sides of a controversial issue. He located two web sites—one that was in favor of the issue and one that was in opposition. The students were to read the on-line information from these primary sources and were then to write several paragraphs (via email) to the instructor stating their position and supporting it with evidence.

The handbook concludes with a list of possible assessment methodologies suitable for distance environments (see Table 1) and recommends that the faculty member review these and then return to the student outcomes to see if some new alternatives might be added given the new information. Many of these alternatives have cost and security issues associated with them. This will be discussed in the following section.

Table 1. A selective list of possible assessment methods for distance teaching

- Fax/email to the instructor
- Fax/email to other classmates
- Videotape oneself and send to instructor
- Classroom chat, bulletin board, or listserve
- Phone conversations with other classmates or instructor
- A conference call with the instructor and several class members
- A conference call between several class members
- Take on on-line test (timed and/or password protected)
- Take a test in a proctored environment (such as another university or Sylvan)

Of course, we do not believe that this handbook will make evaluating students at a distance instantaneously easy. We would still like to see that the instructor meets with an information services employee experienced in instructional design and/or computer-based testing for a consultation with the contents of the handbook creating a basis for the consultation. Finally, the university needs to create an environment where faculty can mentor new faculty and can share their experiences with each other so that pitfalls can be avoided and create solutions can be replicated.

Security and Cost Issues

One concern expressed by faculty in distance delivered instruction is the verification of the identity of students during the assessment process. This issue appears to be especially true in web-based instruction where the instructor interacts with the learners in predominately asynchronous modes (e.g., e-mail, or bulletin board postings). Faculty may me concerned about whether or not the individual talking the tests is, in actuality, the learner enrolled in the course.

When we examine the concept of identity validation in traditional or face-to-face instruction, it is generally assumed that the individual that answers to his or her name, occupies a seat in the classroom for the duration of the course, and participates in the assessments is, in fact, the individual whose name and student identification number appears on the roster. Perhaps it is because we can see, talk to, and interact in a real-time basis with students that we are relatively comfortable with the identity of a particular student.

Various administrative, procedural and technological methods are available to address student identity in distance learning. While no solution is fool-proof, there are also costs associated with most identity validation methods. If security is an issue during assessment, Table 2 identifies some options that are currently available to us.

Table 2. A selective list of possible identity validation options for distance teaching

- Proctored exams at nearby (local) colleges, universities, schools, or formal institutions of learning
- A Consortium of Colleges which have existing agreements to proctor distance delivered instruction from "member" colleges
- Third party organizations such as Sylvan Learning (locations are identified at their web site)
- Secure web based testing software
- Technology options (Workstation student ID card reader, digital signature, thumbprint, voiceprint, or retinal scans)

By partnering with other learning institutions we may discover a collaborative and cost-effective approach to offering testing to examinees. Such consortiums of colleges (such as the Consortium of College Testing Centers, http://testing.byu.edu/consortium/) make use of each other's facilities in exam proctoring or in monitoring the test room. In general, a college, university or other learning facility registers with a consortium and provides such information as the type of test they can administer (e.g., web based or paper and pencil), days and hours of operation or availability, and fees and costs. Other members can search the database to find a proctoring facility convenient in both time and location for their students eliminating the need for distance education students to travel to the originating institution for test taking.

Third party proctored exams are also available. The outside company is responsible for administering the assessment and in ensuring the identify of the participants by checking photo IDs with the actual student and student roster. However, fees and availability may vary from one location to another.

As a second option, secure web based testing software generally consists of a bank of multiple questions. If a student were to log in to take a test, he/she would randomly be assigned questions from that bank. Additionally, adaptive branching is available based on the design of the assessment. In this instance, the next question presented to the student would depend on how a previous question was answered.

Lastly, technology or biometrics solutions can be both costly and difficult to implement based on the level of the learner's technology. In this instance biometrics uses technology to identify unique physical characteristics of the individual. Research seems to indicate that fingerprints, voiceprints, and retinal patterns can be used with a high level of accuracy to verify identity.

It is important for us determine what level of assurance of student identity is appropriate, and to what lengths and costs we will go to ensure authentication. Additionally, we need to be aware of the learner's needs in managing assessment in a distance instruction environment.

References

Frye, C. (March, 2000). A wolf in student's clothing. *Inside Technology Training*, *4*(3), 39.

Thompson, S., Kusner, S., Pachnowski, L., Salzman, J. (In press). *Decision-making in planning and teaching*. New York: Addison-Wesley Longman.

Biographical Sketches

Lynne M. Pachnowski is an Associate Professor of Education and Coordinator of Distance Learning at the University of Akron, Akron, Ohio. Her teachings and research interests include secondary mathematics instruction, integrating technology into teaching, and the pedagogy of distance education.

Steve Mitchell is a Graduate Assistant in Distance Education at the University of Akron. Mr. Mitchell received his bachelor's degree in engineering from Cleveland State University, and is currently pursuing a master's degree in Education Foundations and a doctorate in Curriculum and Instruction.

Address: Zook 130
University of Akron
Akron, OH 44325-4205
E-mail: lmp@uakron.edu or steve8@uakron.edu
Phone: (330) 972-7115
Fax: (330) 972-5636

An Expertise Buffet:
A Team Approach to Online Course Creation

Billie V Strand, Media Production Supervisor
Distance Education/Media Resources
College of Continuing Education, University of Minnesota

Fernando A. Senior, Ph.D., Instructional Designer
Distance Education/Media Resources
College of Continuing Education, University of Minnesota

Sara L. Aase, Course Developer
Distance Education/Media Resources
College of Continuing Education, University of Minnesota

Thomas B. McRoberts, Director
Distance Education/Media Resources
College of Continuing Education, University of Minnesota

About the University of Minnesota

The University of Minnesota is one of the largest public institutions in the United States, with campuses in the Twin Cities (40,000 day school students), Duluth (8,000 students), Crookston (1,000 students), Morris (2,000 students), and the Rochester Center for Continuing Education. Faculty and staff are also located throughout the state in county extension experiment stations. The University has a strong emphasis in research as well as teaching and service. The University of Minnesota is decentralized, with considerable autonomy given to campuses, colleges, departments, and centers.

Over the past few years, more and more faculty have turned their teaching efforts to the World Wide Web. Because the University is so decentralized, the University supports many tools for online delivery, such as TopClass, ClassWeb, and WebCT. In the last year, however, administrators have made a concerted effort to promote and support WebCT, and have formed a WebCT advisory committee on the Twin Cities campus made up of faculty and staff.

The Distance Education department of the College of Continuing Education has received numerous awards for the development of distance learning courses, and is committed to expanding the use of multimedia in online environments. We hope that our efforts result not only in enhanced learning of course content, but also of technology itself, as it is clear that multimedia literacy will be a crucial skill for lifelong learning.

Background of Workshop

The Distance Education department has existed in various incarnations for decades, and has acted as an "arm" to reach off-campus students by any means available—paper, radio, telephone, television, etc. Three years ago, department leaders realized that the World Wide Web, with its ability to incorporate so many of the old media in new ways, would change everything. Distance Education started to put people and processes in place to experiment with online courses, but quickly realized that old processes don't transfer well to a new medium. Recently, the department hired an instructional designer to help guide a more concerted team effort in developing the best courses possible.

The *team approach* as envisioned by Distance Education consists of many players—each with significant and complementary roles. Like an intricate dance, team members join in and leave the floor as the steps require. Administrators wrangle contracts, personnel, and resources. The instructional designer and faculty member, together with course developers, construct courses with demonstrable goals, activities, and learning methods, and match technology tools to those needs accordingly. Others (technical and student support, graphic designers, programmers, librarians, etc.) weave in and out of the process as needed. Together, they all contribute to the success of a course.

Functions in a Team

Teams typically outperform individuals acting alone. This is especially true when multiple skills and experiences are needed to accomplish a task. The creation of online courses certainly qualifies as a task requiring multiple skills. Yet, within organizations—especially colleges and universities—it is often difficult to get people to move beyond individual roles and accountability to work in teams.

Since staff size varies from institution to institution, it is more useful to look at the *functions* needed to create online courses. Whether a person covers one function or many, the issue is still how to get individuals to think and work as a team. The major team functions are:

Functions of the Faculty

Faculty members are the content and teaching experts, and often act as the catalyst for moving a course online. They provide the subject matter, which is the foundation of each course. They consult with the instructional designer to trade ideas about appropriate learning models, goals, interactions, activities for the course, and technological tools, and to come up with a workable plan. The faculty person then writes or develops the course material according to this plan. The faculty member also learns the tools he or she will be using to teach the course, assuming this person is also the instructor.

Functions of the Instructional Designer

The instructional designer orchestrates the delicate balance between issues such as learning objectives, faculty expertise, instructional strategies, assessment, media and technology, team communications, and collaboration and project schedules.

Ultimately, the designer is an advocate for the learner. In order to do this, he/she often coaches, guides and/or persuades faculty and development staff to adopt appropriate learning models along with the new media. Designing online courses is not only about transferring classroom activities, such as lectures, into online resources. It is also about adjusting the teaching and learning paradigm to take advantage of the medium.

Functions of the Course Developer

A course developer takes a course from the instructional design phase to completion. Working with the course author/teacher and the instructional designer, the course developer produces a prototype of how the course will look and "act," and then refines it. Course developers find, test, and learn new online tools. They massage text into HTML via HTML editors.

They write instructions for faculty and students on how to use the tools. They may work with a graphic designer or find graphics and incorporate them as they can. They find programmers to provide the course with extra abilities, or they learn some scripting on their own. They investigate the cost-benefits of adding sound and video. They spend a lot of time getting things to work.

Course developers may also be involved in securing copyright for various media. They hear from the libraries, from administrative staff concerned with how students will sign-on, and from students themselves. They teach instructors how to use the online tools, and sometimes they lead orientations for staff and students. They are also frequently called on to trouble-shoot when courses are in progress. They back up courses weekly, and they are responsible for version control/archiving of courses.

Functions of the Production Manager

The production manager anticipates infrastructure needs and/or implementation road blocks, manages workload assignments, and negotiates timelines with clients or academic units. The manager consults with the instructional designer and developer to evaluate the work processes and to anticipate problems or concerns. The manager advises the administrator on policy issues or concerns that need to be addressed at the collegiate or University level and on the resources and staffing needed to produce courses.

The production manager also sells the work group's services. This entails knowing the benefits of having a course reviewed or designed by an instructional designer and knowing what the development tools will do (strengths and weaknesses). Another important aspect in selling the services is knowing what the learner thinks about online learning, and advantages and disadvantages to the faculty.

Because technology is changing so rapidly, it is also important for the manager to stay current with trends.

Functions of the Administrator

The administrator helps secure the staffing and funding needed to adequately complete the project, and creates a climate of encouragement for online course development to occur. This climate includes intervening in overcoming bureaucratic hang-ups, obtaining additional funding if needed, and bringing attention to the activity beyond the department. It also involves resolving such issues as intellectual property rights, providing just compensation for faculty, and articulating the needs for online instruction as a way of fulfilling the University's outreach mission.

The administrator forges partnerships with colleges that encourage them to develop more online courses, and is "tuned into" the issues associated with online delivery— market trends, financial viability, technology changes, and instructional design concepts.

The Process of Course Design and Development

A successful team needs a work process. An organic process, growing out of the input of all members, means more buy-in and acceptance from team members.

The process designed to meet the needs of Distance Education is centered on six overlapping phases. They are:

1. Course prospecting
2. Course analysis
3. Course design
4. Course development
5. Course support
6. Continuous improvement

Course Prospecting

During this phase, courses are identified and budgets secured. Faculty are selected and introduced to the process, production dates are set, and support staff assigned.

Course Analysis

Faculty, with the guidance of the instructional designer and the approval of the academic unit, define the course structure (i.e. objectives, prerequisites, assessment, credits, etc.), audience characteristics, preliminary instructional strategy, and media choices.

Course Design

All course components are carefully planned and integrated. Specific instructional and motivational strategies, learning activities, supporting resources, and interactivity, to name a few, are drafted for production.

Course Development

Designed materials go into final production and course is assembled and pilot tested. Production includes items such as course interface, images, text files, online exercises, audio and video files, and links and navigation.

Course Support

Once the course is released, students and faculty require administrative, academic, and technical support. Support staff addresses issues such as inquiries, registration, problem-solving with faculty and students, course evaluation, and recommendations for improvement.

Continuous Improvement

Evaluation data provides elements for necessary course improvements and adjustments regarding the assumptions made during the analysis phase, the decisions made in the deign phase, the products implemented in the development phase, and the services provided during the support phase.

Conclusion

Using a team approach to course creation does not mean that a large staff is needed. Rather, a team needs to know what functions they are responsible for and what is the process for accomplishing their task—in this case creating an online course.

Biographical Sketches

Billie V Strand is the media production supervisor in the department of Distance Education/University Media Resources in the College of Continuing Education at the University of Minnesota. She supervises a production staff of editors, multimedia producers, and course producers who have experience with several distance education delivery technologies. Ms. Strand has also worked at UW-Madison and the University of Nebraska-Lincoln.

Address: 330 21st Avenue South
Minneapolis, MN 55455
E-mail: bstrand@cce.umn.edu
Phone: (612) 625-9044
Fax: (612) 624-6079

Fernando A. Senior, Ph.D., is an instructional designer with the department of Distance Education/University Media Resources in the College of Continuing Education at the University of Minnesota. He has expertise in analyzing training and educational needs, designing technology-supported learning solutions and coaching faculty and development teams.

Address: 330 21st Avenue South

Minneapolis, MN 55455
E-mail: fsenior@cce.umn.edu
Phone: (612) 625-3710
Fax: (612) 624-6079

Sara L. Aase is a course producer with the department of Distance Education/University Media Resources in the College of Continuing Education at the University of Minnesota. She combines editorial and technological skills to work with faculty to create effective online courses.

Address: 330 21st Avenue South
Minneapolis, MN 55455
E-mail: saase@cce.umn.edu
Phone: (612) 624-1048
Fax: (612) 624-6079

Thomas B. McRoberts is interim director of the Distance Education department in the College of Continuing Education at the University of Minnesota. He developed and coordinated the University of Minnesota Interactive Television Network. He has experience creating academic programs that meet learner needs and which are designed to be offered via distance education technology.

Address: College of Continuing Education
University of Minnesota
330 21st Avenue South
Minneapolis, MN 55455
E-mail: tmcrober@cce.umn.edu
Phone: (612) 626-7920
Fax: (612) 624-6079

Secrets of Success: The Design, Development and Execution of an Award-Winning Distance Course

Connie S. Wardell, Ed.D.
DL Education Advisor
U.S. Army Armor School

George Paschetto
DL Technical Advisor
U.S. Army Armor School

Introduction

The conversion of the Armor Captains Career Course (AC3) to distance learning (DL) began in August 1997 with an operational test of instructional materials delivered over video teletraining and the Internet to determine if the Internet was capable of handling highly interactive instructional materials. The results indicated that the instructional strategy for the AC3 (DL) was doable. At the same time, the government contracted a complete re-analysis of the course and an identification of cognitive levels of learning within critical tasks taught in the resident course at Fort Knox. This analysis resulted in a design document that laid out the design strategies and educational theories that would focus the development efforts used within the actual DL lessons. This initial groundwork resulted in a hybrid DL course consisting of self-paced Internet-delivered lessons, followed by small group collaborative work using videoteletraining and a virtual environment during week-end sessions, and culminating in a two-week resident phase. This design and the highly interactive instructional courseware that have been a hallmark of the AC3 (DL) resulted in this course winning the U.S. Distance Learning Association's 1999 Excellence in Distance Learning Programming Award for Government. This paper will address the areas of design, development, and execution of this award-winning hybrid DL course.

Background

The AC3 prepares students to be company commanders and battalion and brigade staff officers. A company commander or staff officer is the equivalent of a civilian mid-level manager with at least a bachelor's degree who supervises an organization composed of 60 to 100 subordinates with assets of $30 to $50 million dollars. These leadership roles require advanced skills in planning combat missions against an adaptive enemy force and leading a complex organization made up of maneuver, supply, maintenance, and information assets.

Students traditionally complete the resident AC3 in 18 weeks. Class time for these students totals 719 hours. However, officers in the Army National Guard, which contains 52% of the Army's armored forces, cannot attend the 18-week resident course due to having only 39 active duty training days per year. The difficulty in reaching these National Guard officers along with the importance of the training to the same standard as the Active Component made them ideal candidates for a distance learning version of the resident course.

Design

Overview

The Systems Approach to Training (SAT) is an accepted instructional systems design (ISD) model used by the Army since 1982. SAT has been used throughout the conversion of the AC3 to DL. The resident course underwent a thorough re-analysis and comparison with the old Armor Officer Advance Course—Reserve Component (AOAC-RC) course. Ultimately, this comparison included a task by task crosswalk with the AC3 (DL) to ensure its alignment with the resident course.

Through this thorough application of the SAT process, the end-state competencies for the target audience were focused on, a media breakout matrix was created that identified level of interactivity required by learning domain and level of learning for each part of a task, a comprehensive design document captured all decisions so that developers and program managers could all have the same end-state in mind for the courseware. Without this level of detail, the cognitive and constructivist strategies used throughout the course could not have been identified.

Phase I: Knowledge Based, "Crawl" Stage of Training

The first phase of the course is delivered entirely asynchronously via the Internet. The courseware is delivered using a software solution developed specifically for this course that not only logs the student on but also tracks their progress. The instructor has the ability to observe the students' movement through the material, provide them feedback, and also control their advancement. This phase of the course is broken into volumes, or subject areas, each with individual lesson tests and a culminating exam. Many of the formative tests are computer-graded; however, the complexity of the volume tests, or gates, requires instructor grading to address complex, experience-based, problem-solving scenarios. The students are given one year to complete Phase I.

Phase II: Application Based, "Walk" Stage of Training

The second phase of the course is also delivered via the Internet, but this time the students log on at pre-determined times synchronously. They are given assignments by their small group instructor and work collaboratively using a virtual environment called the Virtual Tactical Operations Center (VTOC), a software program developed for this course. The first and last sessions are presented using videoteletraining to enhance the orientation and the graded final exercise. The students have ten months to complete this phase, usually one weekend per month.

Phase III: Problem Solving, "Run" Stage of Training

The third and final phase of the course is a two-week resident phase. The students come to the Armor School at Fort Knox to conduct exercises in simulators and in local training areas. This phase becomes a two-week capstone exercise in which the students are challenged to synthesize all that they have learned from the first two phases of the course.

Design Issues

Learning decay. The AC3-DL delivers the majority of its content (360 of the 540 hours) using the internet. The effects of this extreme duration must be addressed in the design. The content must be presented in a manner that builds not only knowledge and capability, but also interest. Lessons challenge the student to begin to apply his new knowledge using scenarios. These scenarios give the student a framework on which to "hang" new concepts. They tie lessons together helping to create a building of knowledge. Students also have opportunities to confirm their mastery of each lesson as they progress, instead of waiting for an end of course test.

Attrition. Students at a distance, working independently, are sorely tempted to spend time on other tasks. We attacked this problem on three fronts.

First, the delivery engine used to manage the course content gives the instructor visibility of each student's activity. We can see what dates and times he accessed course content, and how long he spent online. The instructor monitors student activity and contacts those that have been absent too long. He also remains in contact with the student's National Guard Unit Commander, who can provide very effective motivation.

Second, the instructor evaluates student products at the end of each volume of lessons. This presents a challenge to the students, and keeps the instructor involved in each student's development.

And third, the students earn college credits for their successful completion of the course. The credits will be accepted by the University of Louisville towards a degree that can be completed entirely online. Our graduates will be able to complete a Masters Degree without having to travel to campus.

Focusing on the learner. The conversion of the AC3 to DL has focused on the learner from the inception of the project. This focus was not only educational, but also administrative. National Guard officers have limited time to work on professional development. As a result, the course design addresses the content in chunks that can be absorbed at a distance, over a reasonable time frame for this target audience. The self-paced materials in Phase I were limited in hours to match the time required to complete a three credits per semester graduate-level college course. If students complete 20 hours per month, or five hours per week, they can complete the 240 hours of Phase I within a 12-month benchmark. The other two phases fit within the National Guard's typical 39 days per year training window.

The AC3 (DL) course focuses on the learner's needs in numerous ways: the crawl-walk-run presentation of tasks, the emphasis on meeting different students' learning styles (auditory, visual, or kinesthetic), the numerous feedback mechanisms, the instructor involvement, and the course/student management tools. These considerations are intended to increase learning, but also to increase student satisfaction and motivation. Internet-based instruction delivered from a central server allows the most up-to-date materials to be delivered to the student. In this dynamic world of change, this one aspect truly allows the Armor School to meet the learner's needs better by staying current.

Development

The Team Approach

Central to the success of this program, especially during the design stage, is the team approach. Our team contains both government employees and contracted personnel. On the government side, we have three key roles: an educational / training design expert, a technical expert, and a subject matter expert. These persons guide the project, and act as the agents of the course owner —the Armor School Commandant. On the contractor side, we have several companies that work together. They are responsible for detailing the overall design: developing tests, illustrations, animations, practical exercises, and scenarios.

Student-Centered Development

Sometimes training requires little more than providing information. More often, however, informing the student is not enough. The content must be more than an outline providing a framework for knowledge. It must be organized in such a way that understanding is built.

The entire development team must learn to view the course from the student's perspective. This is difficult. The subject matter expert has learned to view the content from a master's perspective. He is in danger of writing lessons that organize the content along his view rather than along a path that leads the student to new understanding. Similarly, the technical expert and graphics designers tend to forget that most students have low-end PCs, not capable of the high speeds and detailed graphics they are used to seeing on their workstations.

The team approach helps mitigate these tendencies. By working together, team members keep each other "honest" and help maintain proper perspective.

Execution

The Instructors

The instructor for the AC3 (DL) pilot course has been a trained resident instructor assigned full-time to the project as the subject matter expert and as the instructor. Future DL courses will be taught by contract instructors who meet the instructor criteria for the resident course. All DL instructors will attend the instructor training required of resident instructors, plus they must attend DL specific instructor training. Rigorous training on the technology is required. The course and student management database allows quality control observation of any instructor to ensure conscientious and timely feedback for students. Instructors must provide email feedback within 24 hours and gate testing feedback with 72 hours. Instructors are available through chat rooms, email, and telephone. Internet-based instructor tools allow for additional instructors at locations other than Fort Knox.

489

Student Management and Support

Students enroll through their units by being placed on the Army Training Requirements and Resource System (ATRRS), a database that manages all Army training enrollments. Once they have been enrolled through official channels, they receive the AC3 (DL) Internet URL and their password through the National Guard Bureau.

Once enrolled in ATRRS, enrollment in the actual course materials is user friendly. All the student has to have is a computer and access to the Internet. For those without Internet access, the courseware is available through a 1-888 number to a Terminal Access Server. Once the student logs on, he is provided plug-ins, links to download the necessary browser, and information on how to work through the course material. Within 24 hours of logging on, the student is contacted via email by his instructor, who will be a facilitator and evaluator throughout the course.

Once the student begins the course material, the database that supports and delivers the course materials starts tracking the student's performance. The database tracks frequency of hits, by day and hour, so that heaviest traffic times can be identified for future equipment and infrastructure needs. This can also identify a student's study habits (Does he go back to review the material before taking the test or does he whip through the material once and leap into the test?) It also keeps a record of pre- and post-test scores for every student and can create graphs and charts to compare the progress of a certain group of students.

Evaluation

Each Internet-delivered lesson in Phase I has a pretest and a posttest. The student must pass the posttest with a score of 70% or higher in order to move to the next lesson. This standard is the same for the 18-week resident course. At the end of a series of related lessons, the student must pass a "gate" test. This module test is part knowledge which is computer-graded, but also part application which is instructor-graded. The knowledge is assessed through multiple-choice and matching tests. The application requires production of items like mission statements, decision matrices, or courses of action. Also included in Phase I are frequent feedback mechanisms called Firefights. These are ungraded checks-on-learning that pop up on the student's screen after a major concept has been covered.

The modules in Phase I build the competencies the student must have in order to apply his knowledge in a small group through roleplaying during Phase II. In Phase II, the student is observed and provided feedback by the small group instructor during each virtual training session. Phase II culminates in a graded exercise in which the small group instructor grades each member of the group on his ability to perform critical tasks.

Finally, the capstone exercise during Phase III places the student in a set of simulations that allow him to function as he would in the field, "on the job." During these two weeks, the student must demonstrate that he can analyze, synthesize, and evaluate during live, constructive, and virtual simulations. The small group instructor of each 15-man group grades each individual during numerous exercises.

Conclusion

The design, development, and execution of the award-winning AC3 (DL) has been a journey that has taken three years. Lessons learned from this project have been far-reaching and will provide the foundation for greater return on investment for future projects at the U.S. Army Armor School.

References

Course materials were designed and developed using accepted instructional systems design according to such noted authorities as Gagne, Briggs, and Wagner (1992) in *Principles of Instructional Design, 4th Edition.* Cognitive instructional strategies were based on Driscoll's (1994) *Psychology of Learning for Instruction*, Bruning, Schraw, and Ronning's (1995) *Cognitive Psychology and Instruction*, and Fleming and Levie's (1993*) Instructional Message Design*. Gagne's Nine Events of Instruction, Bloom's Taxonomy for Levels of Learning, and Merrill's Component Display Theory were key elements in design, development, and execution.

Biographical Sketches

Dr. Connie S. Wardell is the Distance Learning Education Advisor for the U.S. Army Armor School. In addition, she acts as the contract manager for numerous contracts, including the conversion of the Armor Captains Career Course to DL. She is a part-time instructor for the University of Louisville, teaching the course, Distance Teaching and Learning. If you want to see her eyes light up, ask her about learner-centered instructional strategies.

Address: U.S. Army Armor School
ATSB-TID, Bldg 2369
Fort Knox, KY 40121
E-mail: wardellc@ftknox5-emh3.army.mil
Phone: (502) 624-5591
Fax: (502) 624-1880

George T. Paschetto serves as the Technical Advisor to the Director of the Armor School at Fort Knox, Kentucky. He helps guide the design and development of new applications, and evaluates the reusability of existing technologies for use in both resident and distance training. Mr. Paschetto also works part-time as an instructor for the University of Louisville. If you want to see his eyes light up, ask him a question about either his daughters or computer technology.

Address: U.S. Army Armor School
ATSB-TID, Bldg 2369
Fort Knox, KY 40121
E-mail: paschetg@ftknox5-emh3.army.mil
Phone: (502) 624-4708
Fax: (502) 624-1880

Proceedings continued...	No. of Copies	Amount Due
1991 Conference: Designing for Learner Access, 270 pages, $15.00		
1990 Conference: Challenges for New Learning Systems, 205 pages, $12.00		
1989 Conference: Helping Learners Learn at a Distance, 30 keynotes and session papers, 196 pages, $12.00		
1988 Conference: Changing Roles in Education and Training, 32 keynotes and session papers, 158 pages, $12.00		
1987 Conference: Evaluation of Teaching/Learning at a Distance, 25 keynotes and session papers, 220 pages, $12.00		
1986 Conference: Improving Teaching at a Distance, 5 keynotes, 69 pages, $5.00		
1985 Conference: Effective Teaching at a Distance, 6 keynotes, 86 pages $5.00		
1985-1989 Conference Proceedings Package $35.00 (Save $11.00)		

SUBTOTAL: $__________

PAGE 1 SUBTOTAL: $__________

ADD 15% (U.S. ONLY) FOR SHIPPING: $__________

(OUTSIDE OF U.S.: SURFACE SHIPPING RATE UNLESS SPECIFIED OTHERWISE.)

US Funds total $__________

Make check payable to: University of Wisconsin-Madison
(We are sorry but at this time we can not accept credit card orders)

Mail form & payment to:
Distance Teaching & Learning
Conference Manager
University of Wisconsin-Madison

Suite B136 Lathrop Hall
1050 University Avenue
Madison, WI 53706-1386
Telephone: (608) 265-4159

ORDER FORM

Conference Proceedings
From Annual Conference on Distance Teaching and Learning
Madison, Wisconsin

Please enter the number of copies you want to order and the amount due, including shipping costs (see reverse side).

All orders must be pre-paid. Make check payable to University of Wisconsin-Madison.

Name ______________________________

Address: ______________________________

____
City State Zip

E-Mail

Proceedings:	**No. of Copies**	**Amount Due**
2000 Conference: Distance Learning '00 $25.00		
1999 Conference: Distance Learning '99 $25.00		
1998 Conference: Distance Learning '98 $25.00		
1997 Conference: Competition, Connection, Collaboration 471 pages, $25.00		
1996 Conference: Designing for Active Learning, 382 pages, $23.00		
1995 Conference: Teaching Strategies for Distance Learning, 320 pages, $20.00		
1994 Conference: Designing Learner Centered Systems, 198 pages, $15.00		
1993 Conference: Teaming up for Success, 205 pages, $15.00		
1992 Conference: From Vision to Reality: Providing Cost-Effective, Quality Distance Education, 176 pages, $13.00		
SUBTOTAL: *U.S. FUNDS TOTAL*		*$*__________*$*